
Fort Donelson National Battlefield

Boundary Adjustment Study and Environmental Assessment

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**National Park Service
U.S. Department of the Interior**



EXECUTIVE SUMMARY

The U.S. Department of the Interior, National Park Service (NPS) is conducting a Boundary Adjustment Study and Environmental Assessment (BAS & EA) on whether to recommend that Congress authorize expanding the boundaries of Fort Donelson National Battlefield (FODO), in Stewart County, Tennessee, in order to protect related historic sites. The BAS & EA also analyses the environmental impacts of such an action. The sites include: 1) ten eligible properties within the battlefield core area of Fort Donelson itself; 2) Fort Henry, also in Stewart County, Tennessee, and 3) Fort Heiman, located in neighboring Calloway County, Kentucky.

The impetus for initiating the BAS & EA is the following:

- Expansion of the current boundaries of FODO is needed to tell a more complete story of the battle. The current acreage of the National Battlefield comprises only approximately 20 percent of the principal fighting ground associated with the battle. Moreover, at present, FODO primarily protects Confederate earthworks and relates to Confederate military operations at Fort Donelson.
- Although Fort Henry is currently under Federal ownership and managed by the U.S. Forest Service (USFS) as part of Land Between the Lakes National Recreation Area (LBL), increased collaborative and cooperative efforts between the National Park Service and the USFS are needed to enhance interpretation at Fort Henry as well as its interrelationship with Fort Donelson.
- Fort Heiman, currently unprotected, is critical to Fort Donelson National Battlefield. Along with Forts Henry and Donelson, Fort Heiman would protect resources that are associated with the struggle for control of the Tennessee and Cumberland rivers and tell the story of African-American involvement in the Union war effort. Furthermore, protection of the site would also provide the opportunity for interpreting the continuum of Civil War history in the area because of Fort Heiman's association with the Battle of Johnsonville in Forrest's Raid into West Tennessee in 1864.

For each of the properties in question, the Boundary Adjustment Study examines the historic context, significant resources or opportunities for public environment, operational and management issues, protection of park resources, feasibility of administration, and alternatives to National Park Service management. The BAS & EA considers various management alternatives with regard to boundary adjustment at FODO; several were eliminated from more detailed analysis, while two management alternatives are examined in greater depth: A) No Action (no expansion of Fort Donelson National Battlefields' boundaries), and B) Expand Fort Donelson by Adding Fort Heiman and Ten Eligible Properties at Fort Donelson National Battlefield (the preferred alternative). Adding Fort Henry to FODO was determined to be unnecessary because the USFS already provides adequate protection; nevertheless, NPS would cooperate with the USFS to document, protect and interpret Fort Henry.

The BAS & EA also analyzes the environmental impacts that would result from the alternatives considered, including the No Action alternative. It was prepared in accordance with the National

Environmental Policy Act (NEPA) of 1969 (42 USC 4321 et seq.), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500 through 1508) for implementing NEPA, the NPS NEPA compliance guidance handbook (DO-12), and NPS Management Policies 2001.

In addition to the analysis of potential impacts that may result from these different management alternatives, this BAS & EA is also intended to serve as a planning document for potential future projects that the NPS may undertake to enhance visitor experience at each of the sites under Alternative B. In this capacity, the BAS & EA also provides a list of potential environmental and socioeconomic impacts that should be considered in subsequent NEPA documentation regarding these potential future developments. Since these developments are neither part of the scope of this BAS & EA nor the decision to be made regarding the boundaries Fort Donelson, such potential impacts do not affect the comparison of management alternatives presented in this document.

Environmental Effects

Alternative A – No Action (No expansion of Fort Donelson’s boundaries)

Implementation of Alternative A would likely lead to some minor direct and indirect impacts on natural resources at Fort Heiman and the ten eligible properties at Fort Donelson’s battlefield core area, particularly soils, water, vegetation, and wildlife, as a result of continuing and future development and consequent habitat fragmentation over many of the properties. When combined with other residential and recreational development in the surrounding area of Calloway and Stewart counties, minor, adverse cumulative impacts to these resources might result. At Fort Henry, management and protection of natural resources by the USFS and LBL would essentially be equivalent to that offered by the NPS.

Alternative A would not adequately protect significant cultural and historic Civil War-era resources and features at Fort Heiman and the Fort Donelson battlefield core area. Federal, state and local laws, policies, programs and regulations are insufficient to ensure their complete preservation in the absence of federal ownership or some other form of public ownership. Likewise, NPS expertise and cooperation or partnership with stakeholders would not, in and of itself, offer sufficient guarantee of protecting the historic resources of Fort Heiman and the eligible properties at Fort Donelson. At Fort Henry, in contrast, management by the USFS and LBL would furnish adequate protection of that site’s historic features and resources.

By not adding Fort Heiman and the ten eligible battlefield core area properties to Fort Donelson National Battlefield, Alternative A would forego the opportunity to expand the visitor experience at both Fort Donelson and Fort Heiman. At Fort Henry, the visitor experience might improve somewhat as the NPS and USFS cooperated to publicize and interpret the site and link it more explicitly to Fort Donelson.

Alternative A would also forego certain economic and social benefits that would likely accrue in Calloway County (site of Fort Heiman) and Stewart County (site of Fort Donelson and the eligible battlefield core area properties, because the market for heritage tourism would not be

developed and fewer out-of-county and out-of-state tourists would visit the county. It would also miss out on the social benefit that would obtain from stirring pride in county residents at the official recognition of Calloway County's unique contribution to the nation's Civil War history. On the opposite side of the ledger, Alternative A would avoid the adverse effect of an increase in traffic on rural roadways that lead to Fort Heiman and the battlefield core area properties; thus, it would also avoid a possible increase in the number of accidents that occur on these country roads and small urban and semi-urban streets, both vehicle-vehicle and vehicle-pedestrian. At Fort Henry, these effects, both adverse and beneficial, would either not occur or not occur to any appreciable extent, because its management and condition would not change under continuing USFS and LBL stewardship.

In sum, compared with Alternative B, Alternative A does have fewer potential adverse impacts in regards to transportation and human health and safety. However, Alternative A entails greater potential adverse effects than Alternative B in the areas of soils, water, vegetation, wildlife, and particularly historic/cultural resources. Furthermore, Alternative A would lead to fewer benefits to the surrounding economy by missing out on the potential for heritage tourism that adding Fort Heiman to FODO could bring.

Alternative B (Expand Fort Donelson by Adding Fort Heiman and Ten Eligible Properties at Fort Donelson National Battlefield)

Under Alternative B, Fort Heiman and ten eligible battlefield core area properties at Fort Donelson would be added to FODO while Fort Henry would remain under USFS management. At Fort Heiman and the battlefield core area sites, implementation of Alternative B would likely avoid the minor direct and indirect impacts to soils, water, vegetation, and wildlife associated with the No Action Alternative. In addition, certain beneficial impacts on natural resources resulting from NPS management would occur at Fort Heiman under Alternative B. At Fort Henry, management and protection of natural resources by the USFS and LBL would essentially be equivalent to that offered by the NPS at Fort Heiman, if acquired under this alternative.

Alternative B would offer protection for significant cultural and historic Civil War-era resources and features at Fort Heiman and the ten eligible battlefield core area properties. At Fort Henry, management by the USFS and LBL would furnish adequate protection of that site's historic features and resources; however, the degree of preservation over the long term might not be as great as that extended by the NPS at Fort Heiman and the Fort Donelson battlefield core area properties, because the greater emphasis on historic preservation within the NPS mission.

By adding Fort Heiman and the battlefield core area properties to FODO, Alternative B would take advantage of the opportunity to expand the visitor experience at both Fort Donelson and Fort Heiman. Visitation by heritage tourists and the public at Fort Heiman and the ten eligible battlefield properties at FODO would increase greatly, and the quality of their experience would also improve greatly over that available at present. At Fort Henry, the quality of the visitor experience might improve somewhat over existing conditions as the NPS and USFS cooperated to publicize and interpret the site and link it more explicitly to Fort Donelson.

Alternative B would also generate economic and social benefits that would likely accrue in Calloway County, Kentucky (site of Fort Heiman), and to a smaller extent, in Stewart County, Tennessee, attracting heritage tourism and visitors to the two adjacent counties; these tourists would spend money for goods and services there. It would also realize the social benefit and pride Calloway County residents would gain from the official recognition of their county's own unique contribution to the nation's Civil War history. (Stewart County residents already enjoy this benefit because of the recognition accorded Fort Donelson National Battlefield.) On the opposite side of the ledger, Alternative B would generate an increase in traffic on the rural roadways and small, low-capacity connectors and local roads that lead to Fort Heiman and the battlefield core area properties, though probably not to the extent that level of service is degraded; thus, it could also lead to a possible increase in the number of accidents that occur on these country roads, both vehicle-vehicle and vehicle-pedestrian. Eventually, Alternative B could possibly necessitate an upgrade of certain roads or road segments. At Fort Henry, these effects, both adverse and beneficial, would either not occur or not occur to any appreciable extent, because its management and condition would not change under continuing USFS and LBL stewardship.

In sum, compared with Alternative A, Alternative B incurs greater potential adverse impacts in regards to transportation (increased traffic) and human health and safety (a greater risk of traffic accidents). However, these adverse traffic-related effects are localized and negligible to minor. In contrast, Alternative B entails beneficial effects in the areas of soils, water, vegetation, wildlife, and particularly historic/cultural resources. Furthermore, Alternative B would lead to greater benefits for the surrounding economy by capitalizing on the potential for heritage tourism that adding Fort Heiman and the ten eligible battlefield core area properties to FODO could bring.

Preferred Alternative

Alternative B is both the agency preferred alternative and the environmentally preferred alternative. It is the environmentally preferred alternative because it would do a much better job of preserving important historic and cultural aspects of our national heritage than would Alternative A. It would also provide for greater enhancement of the visitor experience than Alternative A. For both these reasons it is the preferred alternative of the National Park Service.

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1.0 INTRODUCTION TO STUDY AND ASSESSMENT

1.1 PUPOSE OF AND NEED FOR ACTION

The initiative for a Fort Donelson National Battlefield Boundary Adjustment Study emanated from well-attended Vicksburg Campaign Trail public meetings in Dover, Tennessee, and Murray, Kentucky, during May-June 2002 that were conducted to discuss preservation of Civil War sites in northern Tennessee and western Kentucky. In response to growing public interest in the surviving resources associated with the Vicksburg Campaign, the Vicksburg Campaign Trail Battlefields Preservation Act of 2000 (Public Law 106-487) authorized the Secretary of the Interior, acting through the Director of the National Park Service, to complete a three-year feasibility study to determine the most appropriate means of managing, preserving, and interpreting Civil War battlefields and related natural, cultural, and historic resources along the Vicksburg Campaign Trail.

During the two aforementioned meetings, which were attended by approximately 110 people, the majority of the expressed sentiments related to the need for preserving resources and telling the “complete” story associated with Forts Donelson, Henry, and Heiman (sometimes referred to as the “Trilogy of Forts”) and their significant interrelated role in the Federal Penetration Up the Cumberland and Tennessee Rivers Campaign in February 1862 that provided the Union Army with an “open gate” to the Deep South.

Thus, the impetus for initiating the Boundary Adjustment Study is predicated on the following:

- Expansion of the current boundaries of Fort Donelson National Battlefield (FODO) is needed to tell a more complete story of the battle. The current acreage of the National Battlefield comprises only approximately 20 percent of the principal fighting ground associated with the battle. Moreover, at present, FODO primarily protects Confederate earthworks and relates to Confederate military operations at Fort Donelson.
- Although Fort Henry is currently under Federal ownership and managed by the U.S. Forest Service, increased collaborative and cooperative efforts between the National Park Service and the U.S. Forest Service are needed to enhance interpretation at Fort Henry as well as its interrelationship with Fort Donelson.
- Fort Heiman, currently unprotected, is critical to Fort Donelson National Battlefield. Along with Forts Henry and Donelson, Fort Heiman would protect resources that are associated with the struggle for control of the Tennessee and Cumberland rivers and tell the story of African-American involvement in the Union war effort. Furthermore, protection of the site would also provide the opportunity for interpreting the continuum of Civil War history in the area because of Fort Heiman’s association with the Battle of Johnsonville in Forrest’s Raid into West Tennessee in 1864.

Figure 1-1 shows all three forts relative to each other and the States of Tennessee and Kentucky.

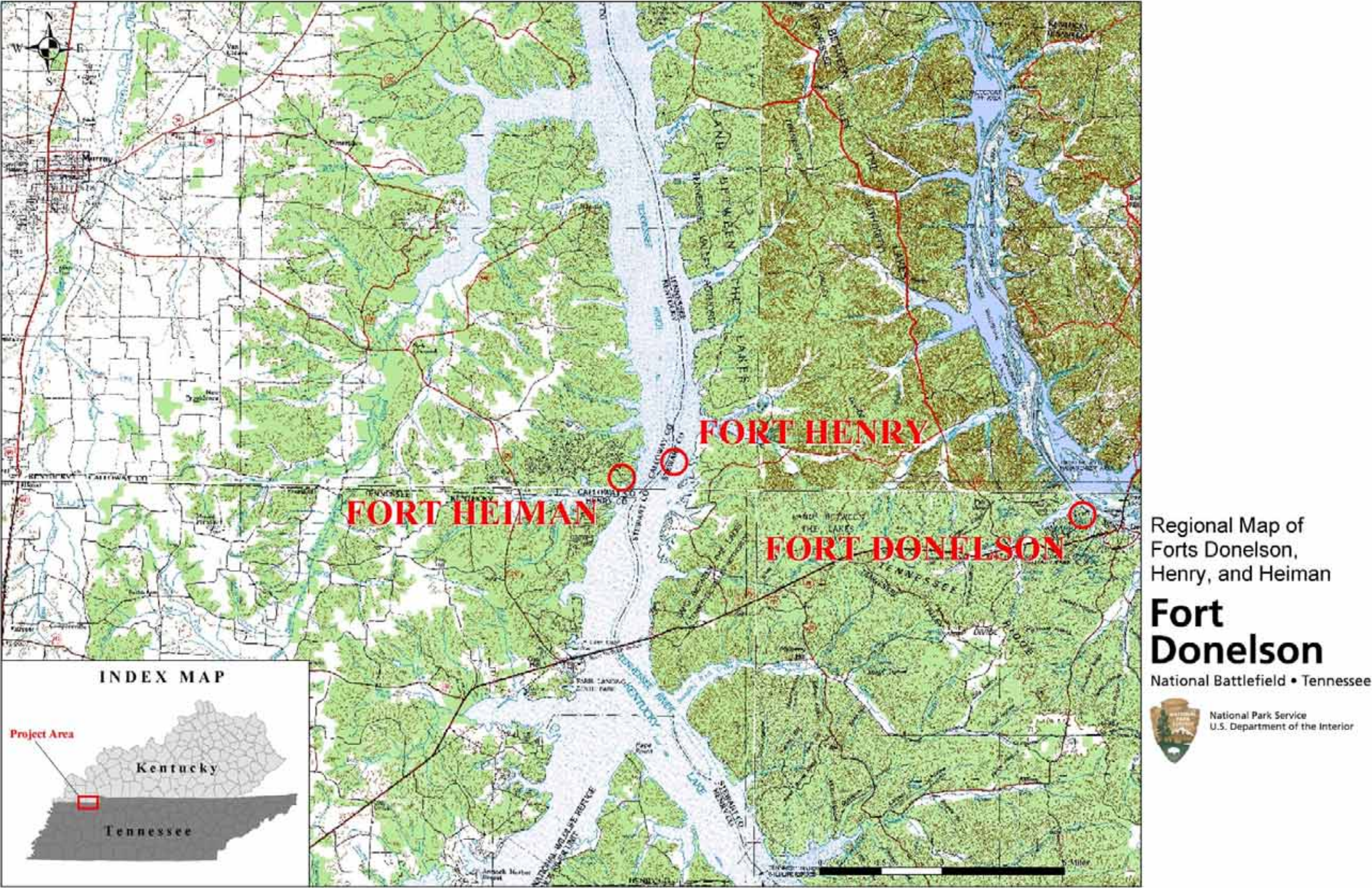


Figure 1-1. Regional map of Forts Donelson, Henry, and Heiman

1.2 STUDY PROCESS AND ENVIRONMENTAL ASSESSMENT

Public Law 101-628, Section 1216, directs the Secretary of the Interior to develop criteria to evaluate any proposed changes to the existing boundaries of individual national parks. Those criteria were to include:

- Analysis of whether the existing boundary provides for the adequate protection and preservation of the natural, historic, cultural, scenic, and recreational resources integral to the park
- An evaluation of each parcel proposed for addition or deletion based on this analysis
- An assessment of the impact of the potential boundary adjustments, taking into consideration the factors listed above as well as the effect of the adjustments on local communities and surrounding areas

Public Law 101-628, Section 1217, further requires that in proposing any boundary change the Secretary of the Interior will:

- Consult with affected agencies of state and local governments, surrounding communities, affected landowners, and organizations of concern
- Apply the criteria-developed boundary adjustments and reflect the conclusions of the application of the criteria
- Include a cost estimate of acquiring parcels proposed for addition to a park

On December 30, 1991, the National Park Service issued Special Directive 92-11 to provide guidance for implementing the provisions of Public Law 101-628. Section 3.5 of NPS *Management Policies 2001* describes policies and criteria for boundary adjustments to national parks.

What follows is the application of the criteria in Special Directive 92-11 and Section 3.5 of the NPS *Management Policies 2001* to the resource conditions at Forts Heiman and Henry to determine what properties might be considered eligible for addition to Fort Donelson National Battlefield. It should be noted that this is strictly a technical evaluation and that specific action would be at the discretion of Congress.

Property considered for inclusion in the national park system must be evaluated against established criteria to determine if it meets eligibility requirements prior to recommendation to Congress for formal action. According to the established criteria, properties may be recommended for the following reasons:

- To include significant resources or opportunities for public enjoyment related to the purpose(s) of the park
- To address such operational and management issues as access and boundary identification by topographic or other natural features and roads
- To protect park resources critical to fulfilling the park's purpose(s)

The criteria also demand that properties be evaluated for the following determinations:

- It will be feasible to administer, considering size, configuration, ownership, costs, and other factors.
- Other alternatives for management and resource protection are not adequate.

In this document, a Boundary Adjustment Study (BAS) and an Environmental Assessment (EA) are integrated into one combined study/assessment. The EA analyzes the environmental impacts that would result from the alternatives considered, including the No Action alternative. The EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 USC 4321 et seq.), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500 through 1508) for implementing NEPA, the NPS NEPA compliance guidance handbook (DO-12), and NPS Management Policies 2001 (NPS, 2001).

The Purpose of an Environmental Assessment (EA)

An EA is a study conducted by a Federal agency to determine whether an action the agency is proposing to take would significantly affect any portion of the human or natural environment. The intent of the EA is to provide project planners and Federal decision-makers with relevant information on a Proposed Action's impacts on the environment.

If the EA finds that no significant impacts would result from the action, the agency can publish a Finding of No Significant Impact (FONSI), and can proceed with the action. If the EA finds that significant impacts would result from the action, then the agency must prepare and publish a detailed Environmental Impact Statement (EIS) to help it decide about proceeding with the action.

1.3 PROPOSED BOUNDARY ADJUSTMENTS

1.3.1 Fort Heiman, Calloway County, Kentucky

Historic Context

When Confederate Brig. Gen. Lloyd Tilghman was sent to command hastily constructed Fort Henry on the east side of the Tennessee River during the winter of 1861-62, he realized immediately that the fort was indefensible. It had been built on low ground that was susceptible to flooding and was directly across the river from higher ground. In January 1862, Gen. Albert Sidney Johnston ordered Tilghman to construct a new fort – known as Fort Heiman after Col.

Aldolphus Heiman of the 10th Tennessee who commanded the 1,100 troops at the fort – on the bluffs on the west bank (Kentucky side) of the river. African-American laborers performed a significant role in the construction of the fort. The new fort was still under construction when Union Brig. Gen. Ulysses S. Grant launched his offensive against Forts Henry and Donelson in early February 1862.

On February 4-5, 1862, Grant landed his divisions in two different locations – one on the east bank of the Tennessee River to prevent the garrison at Fort Henry from escaping to or receiving reinforcements from Fort Donelson and the other on the high ground on the Kentucky side to ensure the fall of both Forts Heiman and Henry. With the arrival of some 15,000 Union troops along with Federal gunboats under the command of Flag Officer Andrew H. Foote (ironclads were used for the first time in these military operations) Tilghman, realizing that Fort Heiman could not be held, recalled the 1,100 troops building Fort Heiman to cross the river and assist the nearly 2,000 soldiers defending Fort Henry. The Confederates hoped that the muddy roads would make it impossible for the Union army to set up artillery on the partially completed Fort Heiman. On February 6, Tilghman surrendered Fort Henry after 70 minutes of bombardment, because it was flooded by rising water and could not be supported by infantry. Tilghman decided to withdraw all troops from Fort Henry to Fort Donelson with the exception of one battery, which he left behind to delay the Union assault and secure his retreat. After the capture of both Fort Henry and the uncompleted Fort Heiman, the latter was occupied by Union troops under Brig. Gen. Lew Wallace on February 6. Thus, the surrender of Forts Heiman and Henry enabled the Federals' gunboats to ascend the Tennessee River south to Muscle Shoals, Alabama, and set the stage for Grant's successful assault against Fort Donelson 11 miles to the east on the Cumberland River.

After the Confederate surrender of Fort Donelson on February 16, western Kentucky and Tennessee continued to play a vital role in military operations for the remainder of the Civil War. For the Union, the Tennessee and Cumberland Rivers were vital supply lines that had to be maintained. For the Confederates, the area between the rivers was a sparsely defended region that cavalry raids and guerilla operations could penetrate easily to disrupt Union communication and supply lines. Thus, Federal troops occupied unfinished Fort Heiman until March 6, 1863, to afford Union protection to the people in the area and, perhaps more importantly to the Union army, protect the vital supply lines that the Tennessee and Cumberland Rivers had become.

During 1862-63 Fort Heiman was garrisoned by troops from the 5th Iowa Cavalry under the command of Col. William W. Lowe. Forts Heiman, Henry, and Donelson offered a haven for a growing number of refugees, most of whom were slaves seeking safety within the Union lines. The Federals housed the freedmen, who were officially termed "contraband of war," employing them as laborers at the forts and in the area's industries.

Before evacuating the fort on March 6, 1863, as part of the buildup of Union forces in the region, Lt. Col. Matthewson T. Patrick, in command of the post at Fort Heiman, was ordered to level the river face of the fort's earthworks. He reported that the earthworks fronting the river were "very slight – the fort never having been completed by the rebels." Although the earthwork fortifications along the river were destroyed, largely intact outer earthworks along the crest of the bluffs, an upper battery, and remnants of what may have been a powder magazine remain onsite.

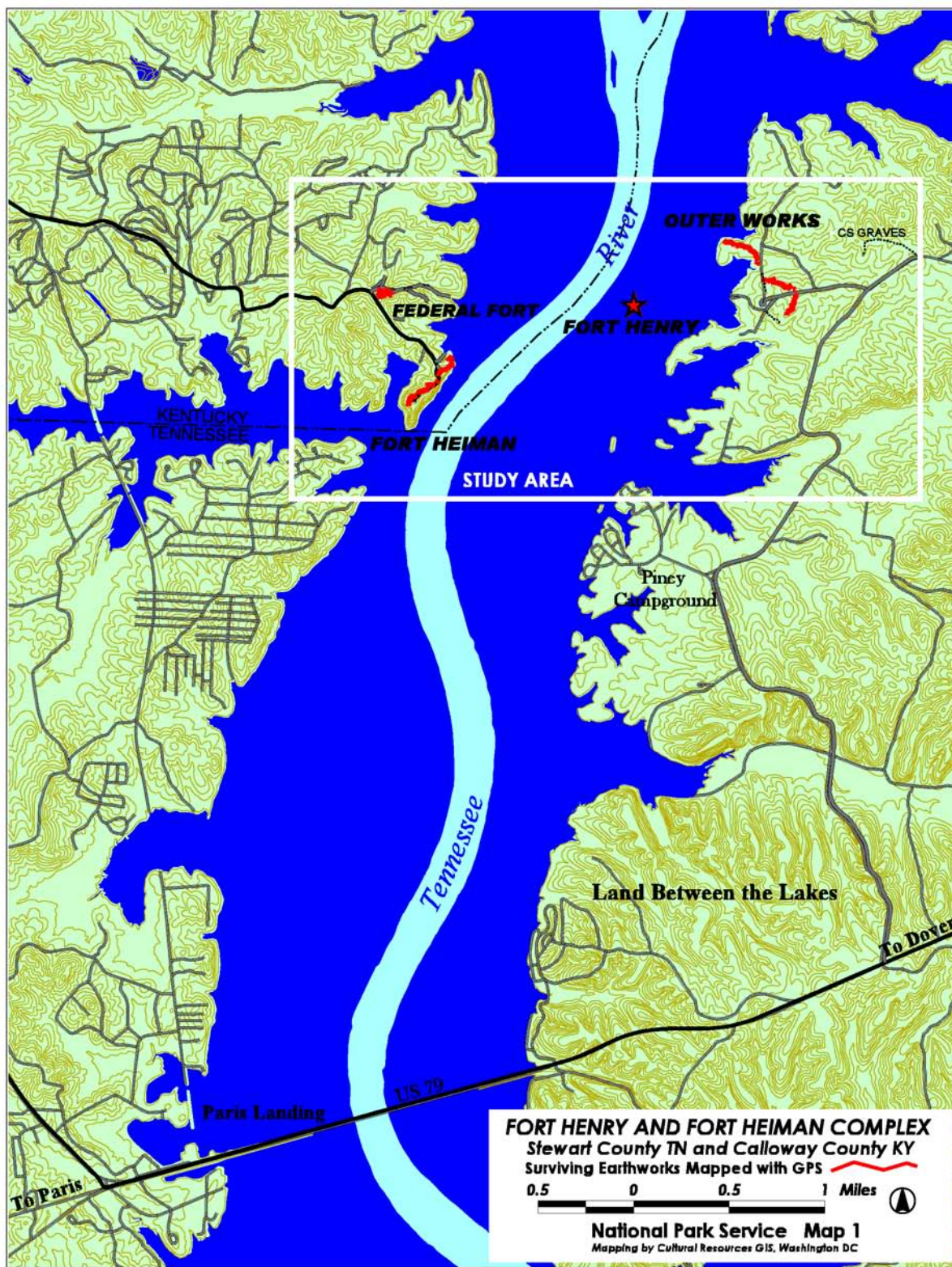


Figure 1-2. Vicinity Map of Fort Heiman and Fort Henry

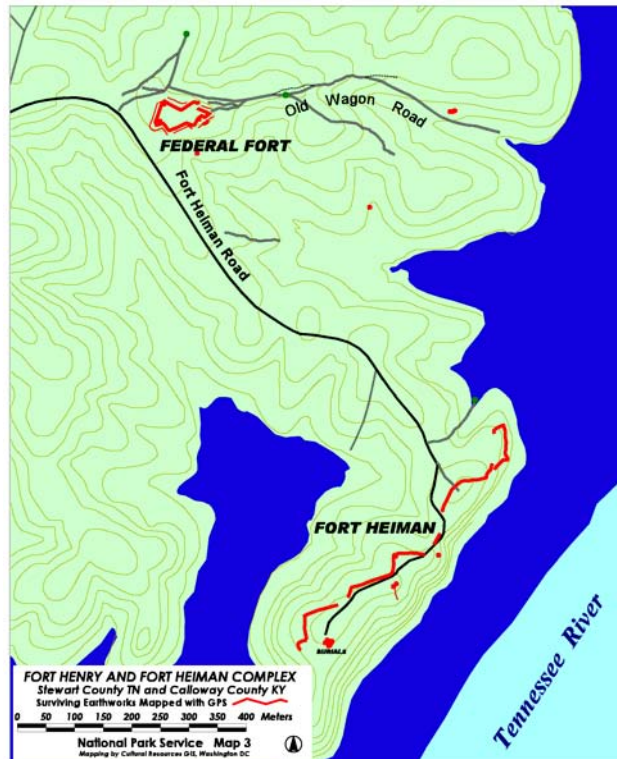


Figure 1-3. Federal Fort and Fort Heiman

Despite its strategic location, neither side made a sustained effort to occupy Fort Heiman once the war moved south into Tennessee. Perhaps the greatest Confederate military success in the Fort Heiman vicinity occurred in late October 1864 when Confederate Maj. Gen. Nathan Bedford Forrest occupied the fort with 3,500 men. On October 28, using the fort as their base, Forrest's cavalymen fired upon and captured the Union steamboat *Mazeppa*. Two days later, the Confederates continued their assault on Union vessels passing along the Tennessee River from Fort Heiman, firing on the *Anna*, disabling the *Undine*, forcing the *Venus* to surrender, and causing the *J.W. Cheeseman* to be abandoned. Thereafter, the Confederates took a Union vessel and headed upriver where they engaged the Union navy. Eventually Forrest burned all the seized boats once they had been stripped of their cargoes of food and supplies. During these encounters only one Confederate was wounded, while eight Union troops were killed, 11 wounded, and 43 captured, including one officer.

On November 4, Forrest launched his most successful raid during the Civil War from his base at Fort Heiman, attacking the Union supply base at Johnsonville, Tennessee, some 30 miles to the south at the western terminus of the Nashville and Northwestern Railroad. During the raid, Forrest's cavalymen destroyed four Union gunboats, 14 transports, 20 barges, and 26 pieces of artillery; captured 150 Union soldiers. They also burned millions of dollars' worth of stockpiled supplies bound for Nashville and Union Maj. Gen. George H. Thomas' army. During this encounter, Confederate losses were two killed and nine wounded.



Figure 1-4. Earthworks at Fort Heiman

Significant Resources or Opportunities for Public Enjoyment

Fort Heiman was listed in the National Register of Historic Places on December 12, 1976, under Criterion A because of its association with events that have made a significant contribution to the broad patterns of United States history.

The significance of Fort Heiman lies in its association with the Battles of Fort Henry and Fort Donelson as well as the Battle of Johnsonville. In 1993 the Civil War Sites Advisory Commission listed the Battle of Fort Henry and the Battle of Fort Donelson as two of the 384 principal battles of the Civil War. The commission designated the Battle of Fort Henry as having Class B military importance, because it had a direct and decisive influence on the “Federal Penetration Up the Cumberland and Tennessee Rivers (1862)” Campaign of the Main Western Theater Minus the Gulf Approach. The Battle of Fort Donelson was designated as having Class A military importance, because it had a decisive influence on the campaign and a direct impact on the course of the Civil War.

The Civil War Sites Advisory Commission also listed the Battle of Johnsonville as one of the 384 principal battles of the Civil War. The commission designated the battle as having Class B military importance, because it had a direct and decisive influence on “Forrest’s Raid into West Tennessee (1864),” an important campaign associated with the Main Western Theater Minus the Gulf Approach.

During 1994-95, the Forrest C. Pogue Public History Institute at Murray State University, Murray, Kentucky, conducted the Jackson Purchase Civil War Sites Survey Project, with funding provided by a grant from the Kentucky Heritage Council. The study documented the general dimensions and extant historic features – earthwork fortifications, including trench lines, an outer battery or fortified redoubt, and a possible powder magazine, as well as historic road traces and former grave sites – at the Fort Heiman Site, a parcel consisting of some 350 acres.

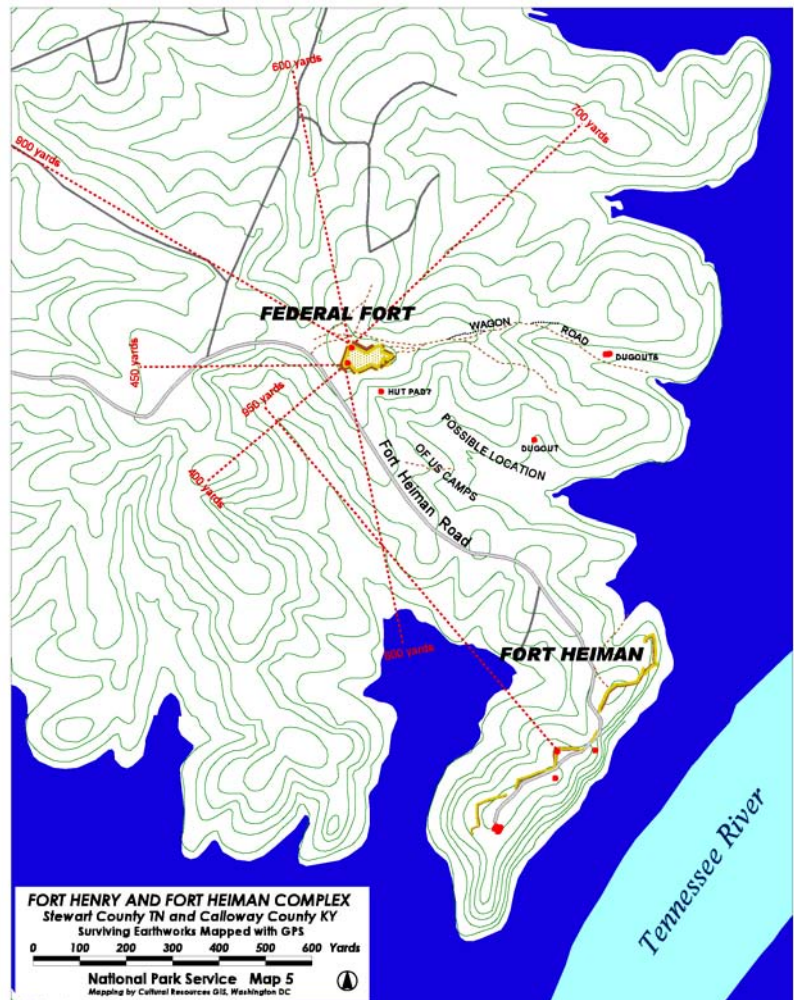


Figure 1-5. “Federal Fort” at Fort Heiman

In June 2002 David W. Lowe of the National Park Service's Cultural Resources GIS Office directed a Global Positioning System (GPS) survey of the Fort Heiman complex and prepared detailed maps of two areas of interest – Fort Heiman proper and the “Outer Battery” or “Federal Fort” (Figure 1-5). In Fort Heiman proper, 593 meters (648 yards) of readily visible and largely intact surviving earthworks were mapped. The earthworks range in relief from 0.7 to about 2 meters (1-6 feet). At the south end of the site, nine pits were mapped which are said to be graves from which the bodies were later removed. Farther north is another similar pit likely associated with a single burial. Between these gravesites is a large rectangular hole thought to be the remains of the fort's magazine. Adjacent is a smaller hole with a communication trench leading down the bluff toward the water.

The “Outer Battery” or “Federal Fort” is sited where two historic roads climbed out of the river bottom to join what is now Fort Heiman Road, about 830 meters inland from the works at Fort Heiman proper. The fort is an irregular redoubt designed to support 3 or 4 guns with an inner perimeter (along the parapet) of 258 meters and an outer perimeter (outer edge of the ditch) of 308 meters. The parapet encloses 2,766 square meters, nearly 0.7 acres, which make it comparable in size to most of the Federal forts found along the Petersburg, Virginia, lines. The ravine southeast of the fort contains what appear to be a hut pad and several rectangular dugouts, suggesting that the area may have been used as the garrison encampment. Taken together, these Civil War-era resources represent an extensive intact fortification, encampment, and road complex that are likely to yield significant archeological resource information.

Thus, the site affords the opportunity to provide a more complete interpretation of the significant aspects of the Battles of Forts Henry and Donelson, as well as Johnsonville, and a more comprehensive understanding of the important elements of Union and Confederate efforts to control the two major water transportation routes – the Tennessee and Cumberland Rivers – in the Confederate west. The site also affords the opportunity to emphasize African-American involvement in both the Union and Confederate war efforts.



Figure 1-6. House under construction at Fort Heiman

Many of the core Civil War-era resources associated with Fort Heiman remain in woodlands; thus, the resources retain a relatively high degree of integrity, although the area, largely denuded of trees during the war, is now grown over and has been impacted by erosion, several roads and houses, and other vestiges of real estate subdivision development, particularly near the river (Figure 1-6). The boundary of the Fort Heiman parcel would be adjusted to avoid land use conflicts. Fort Heiman proper and the outer battery or Federal fort are relatively

intact because they are protected by woodlands on high bluffs overlooking Kentucky Lake and the Tennessee River. Thus, the site retains a relatively high potential to yield significant archeological information.

The Fort Heiman site also provides scenic panoramic vistas overlooking Fort Henry and a broad expanse of the Tennessee River Valley, as well as the Land between the Lakes National Recreation Area (Figure 1-7), thus presenting opportunities for interpreting the struggle to control the Tennessee and Cumberland Rivers throughout the Civil War. Because the site overlooks Fort Henry, which is largely under the waters of Kentucky Lake, it also presents the opportunity to interpret the Battle of Fort Henry as well as the relationship between Forts Heiman and Henry.



Figure 1-7. View of Kentucky Lake (Tennessee River) from bluffs at Fort Heiman

Fort Heiman is critical to Fort Donelson National Battlefield because it, along with Forts Henry and Donelson, would protect resources that are: (1) associated with significant military operations in the “Federal Penetration Up the Cumberland and Tennessee Rivers (1862)” in the Western Theater of Operations and that are two of the 384 principal battlefields of the Civil War as identified by the Civil War Sites Advisory Commission, and (2) associated with significant military activities and the Battle of Johnsonville in “Forrest’s Raid into West Tennessee (1864)” in the Western Theater of Operations and that is also one of the 384 principal battlefields of the Civil War. Thus, Fort Heiman affords the opportunity to: (1) relate the story of Fort Heiman to both the Battles of Fort Henry and Donelson as well as the subsequent Battle of Johnsonville, (2) interpret the struggle for the control of the Tennessee and Cumberland Rivers during the Civil War, and (3) tell the story of African-American involvement in the Union and Confederate war efforts. Thus, protection of the site provides the opportunity for interpreting the continuum of Civil War history in the area as well as providing a more complete interpretive story of the Fort Henry and the Donelson Campaign.

Critical resources include the aforementioned extant historic features at Fort Heiman that retain a high degree of historic integrity as well as the panoramic vistas of the Kentucky Lake-Tennessee River Valley and Land Between the Lakes National Recreation Area from the site that provide

the historic context for interpreting the Battle of Fort Henry and the struggle to control the river as a major transportation artery in the Confederate west.

Operational and Management Issues

County roads, landownership patterns, and topographical features define the boundary of the Fort Heiman site. The site includes some 350 acres on which the aforementioned extant historic features associated with the fort are located.



Figure 1-8. Existing privately-owned house at Fort Heiman

Access to the site is by Calloway County roads. Although portions of the site have been cleared and subdivided into lots for residential purposes, only one modern residence (Figure 1-8) and one partially completed house (Figure 1-7), along with associated roads, are currently on Fort Heiman. With the exception of these two structures and associated roads, the site, as well as adjacent land use, is primarily pastoral and woodlands with much of the adjoining land being administered by the Tennessee Valley Authority (TVA). The site provides opportunities for interpretive/ recreational trails,

water-related activity and access, interpretive media, small-scale parking, and non-personal services. Although a visitor contact facility would be needed at the site, no housing would be needed.

Due to its relative isolation and the distance of Fort Heiman from Fort Donelson headquarters, there might be a need for some maintenance or other administrative facilities near Fort Heiman.

Protection of Park Resources

Although only two modern structures and associated roads have been constructed on Fort Heiman, some 20 acres of the historic property have been cleared and subdivided for residential lots. Recent clear-cut logging operations north of the outer battery (Figures 1-9 and 1-10) has obliterated the old road trace leading through the parcel, and future clear-cutting operations could adversely impact the historic setting. Construction of more homes and other structures in the area or further subdivision and development of Fort Heiman property could substantially change the historic setting that is essential for interpreting the fort's significance.



Figure 1-9. Clearcut logging to the north of Fort Heiman

Feasibility of Administration

Although geographically separated from Fort Donelson, the land on which Fort Heiman is located would be managed without substantial costs. Management of the site would be facilitated by the fact that there is one road ingress and egress to the site. The immediate surroundings of the site retain much of their historic pastoral/ woodland character. The site is entirely

in private ownership, and the ownership pattern is known. Some funds are already available from the Commonwealth of Kentucky, the Land and Water Conservation Fund, and the principal landowner at the site for the acquisition of land. Some land acquisition is already occurring. The total dollar figure dedicated to land acquisition from the Commonwealth of Kentucky has been \$750,000 to date. Thus, it is understood that acquisition costs would be modest and that there would be few, if any, obstacles in acquiring the property on a willing-seller basis. While historic resources and their preservation would drive the final boundary configuration of the historic site, to avoid conflicts, private residential properties would not be acquired unless specific critical resource protection or visitor use needs were identified.

Partnerships with state, local, and private organizations would be established at the earliest possible time. Partnerships to advance mutually beneficial goals in education and interpretation would be aggressively pursued in Calloway County, Kentucky, and Stewart County, Tennessee. The potential to use shared facilities would be explored as well.

Management costs for Fort Heiman would be modest, including periodic mowing, routine law enforcement patrols, trash collection, and perhaps partnerships with local governments and/or private organizations to obtain services for development of a seasonal educational/ interpretive program and personal visitor services. Aside from acquisition

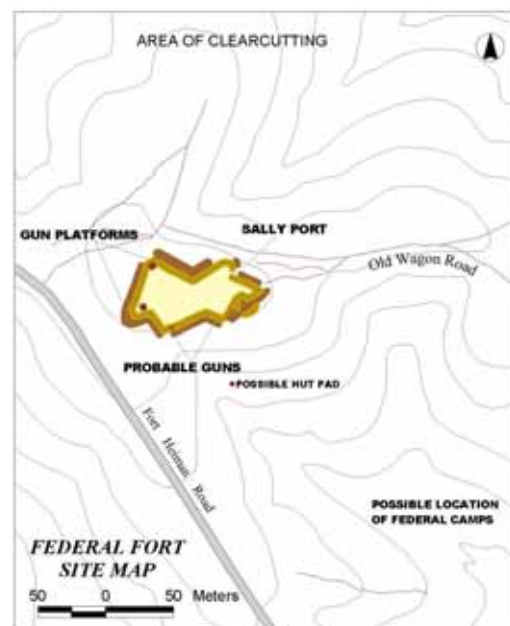


Figure 1-10. Area of clearcut logging

costs, there would be no perceived short-term development costs. Long-term development costs would result from interpretive/recreational trail development and construction of a visitor contact facility, waysides and other interpretive media, and a small-scale parking area. Modest expenditures would also be needed to rehabilitate and afford preservation treatment to some of the historic resources.

Alternatives to National Park Service Management

Although various state and local entities are actively interested in protecting and interpreting Fort Heiman, all have limited resources and none envision long-term management of the property. It is the stated intention of these entities to have the site included in the national park system as part of Fort Donelson National Battlefield. No other management entity capable of providing for the necessary levels of resource protection and visitor use at Fort Heiman has emerged. Other regulatory mechanisms for the protection of the site, such as county zoning, are significantly limited.

1.3.2 Fort Henry, Stewart County, Tennessee

Historic Context

Cairo, Illinois, at the confluence of the Ohio and the Mississippi rivers, was vital to the United States because of its location and the operations base established there. The Western Flotilla had nine new ironclad gunboats, seven of which were the creation of James B. Eads, a boat builder in St. Louis. Each of the seven had 13 guns, a flat bottom, and shallow draft. Protection was provided by a sloping casemate covered with iron armor 2.5 inches thick designed by Samuel Pook. One of the most notable of “Pook’s Turtles” was the USS *Carondelet*.

The first test of three of these new warships was against Fort Henry, an earthen fort that the Confederates had hastily constructed on the east (Tennessee) bank of the Tennessee River during the winter of 1861-62. When Confederate Brig. Gen. Lloyd Tilghman was sent to command the fort, he immediately realized that Fort Henry was indefensible, because it was constructed on low ground susceptible to flooding and was directly across the river from high ground. In January 1862, he ordered the construction of a new fort on the high ground on the west (Kentucky) side of the Tennessee River, known as Fort Heiman. The new fort was still under construction when Union Brig. Gen. Ulysses S. Grant launched his offensive against Forts Henry and Donelson in early February 1862.

In a joint army-navy operation a fleet of seven gunboats – four ironclads and three wooden ones – under Union naval Flag Officer Andrew H. Foote steamed out of Cairo, Illinois, on February 2, leading the transports carrying Grant’s force. On February 4-5, Grant landed his divisions in two different locations, one on the east bank of the Tennessee River to prevent the garrison at Fort Henry from escaping to Fort Donelson and the other to occupy the high ground on the Kentucky side to ensure the fall of both Forts Heiman and Henry. After Foote’s gunboats began bombarding the forts, Tilghman recalled the troops building Fort Heiman to assist in the defense of Fort Henry. Tilghman soon realized that he could not hold Fort Henry. Thus, he ordered his

Fort Henry and Fort Donelson Campaign
Federal movements shown in BLUE.
Confederate fortifications shown in RED.

February 6
Federal troops proceed to Fort Henry; Federal gunboats fire on fort; most Confederate defenders escape overland to Fort Donelson; Fort Henry captured.

February 7-13
Federal gunboats travel from Fort Henry on Tennessee River to Cumberland River via Ohio River.

February 11
Federal troops advance 12 miles to Fort Donelson.

February 13-15
Federal troops attack Confederate outer defenses.

February 14
Federal gunboats disabled by river battery cannon.

February 15
Confederate troops attack Federal right flank.

February 16
Unconditional surrender of Fort Donelson after escape of some troops upriver.

February 17
Federal reinforcements land downstream and proceed 5 miles to Fort Donelson.

DOVER

Fort Henry

Fort Donelson

Tennessee River

Cumberland River

Road to Dover

Telegraph Road

Ridge Road

Road to Paducah

Road to Campbell

Gunboats

North

0 1 3 Kilometers

0 1 3 Miles

Figure 1-11. Fort Henry and Fort Donelson Campaign, February 1862

Figure 1-11. Fort Henry and Fort Donelson Campaign, February 1862

Significant Resources or Opportunities for Public Enjoyment

The Fort Henry site was listed in the National Register of Historic Places on October 10, 1975, under Criterion D because of its potential for yielding information important in United States history.

In 1993, the Civil War Sites Advisory Commission listed the Battle of Fort Henry as one of the 384 principal battles of the Civil War. The commission designated the battle as having Class B military importance, because it had a direct and decisive influence on the “Federal Penetration

Up The Cumberland and Tennessee Rivers (1862)” Campaign of the Main Western Theater Minus the Gulf Approach.

The Fort Henry Site has been designated by the Tennessee Historical Commission (THC) as one of the state’s 38 most significant Civil War sites.

During 2001, the Land Between the Lakes Association, Golden Pond, Kentucky, prepared a study, “The Preservation of Fort Henry and Associated Sites,” with funding provided by a grant from the American Battlefield Protection Program, National Park Service. The study documented the general dimensions and historic features at the Fort Henry site.

Thus, the site, which is managed by the U.S. Forest Service (USFS) as part of Land Between the Lakes (LBL) National Recreation Area, affords the opportunity to relate significant aspects of the Battle of Fort Henry. The site, along with Forts Donelson and Heiman, also provides the opportunity to interpret Union efforts to control the two major water transportation routes – the Tennessee and Cumberland Rivers – in the Confederate west.

Fort Henry consisted of a series of outer earthworks and rifle pits in addition to the main fort that consisted of five bastions augmented with sandbags. Today the largest portion of the site is inundated by Kentucky Lake – a lake created by the TVA during the 1940s (Figures 1-12 and 1-13). However, most of the outer earthworks (consisting of 902 meters [986 yards] of double ditched parapet that ranges in width from 4.2 to 4.9 meters [14-16 feet] and relief from 0.9 to 1.6 meters [3-5 feet] on the average) of the original site remain intact and above water in heavily forested terrain (Figure 1-14). Thus, the area of the outerworks retains a relatively high degree of its historic character, although it has been impacted by erosion, logging, high lake water, roads, and construction of a boardwalk and interpretive trail during the 1970s. In addition, five Confederate soldiers’ graves have been identified and marked to the east of the outerworks (Figures 1-15 and 1-16). The largely pristine nature of the outerworks and portions of the main fort that have been inundated have relatively high potential for archeological survey and research.



Figure 1-12. Main fort at Fort Henry, under Kentucky Lake

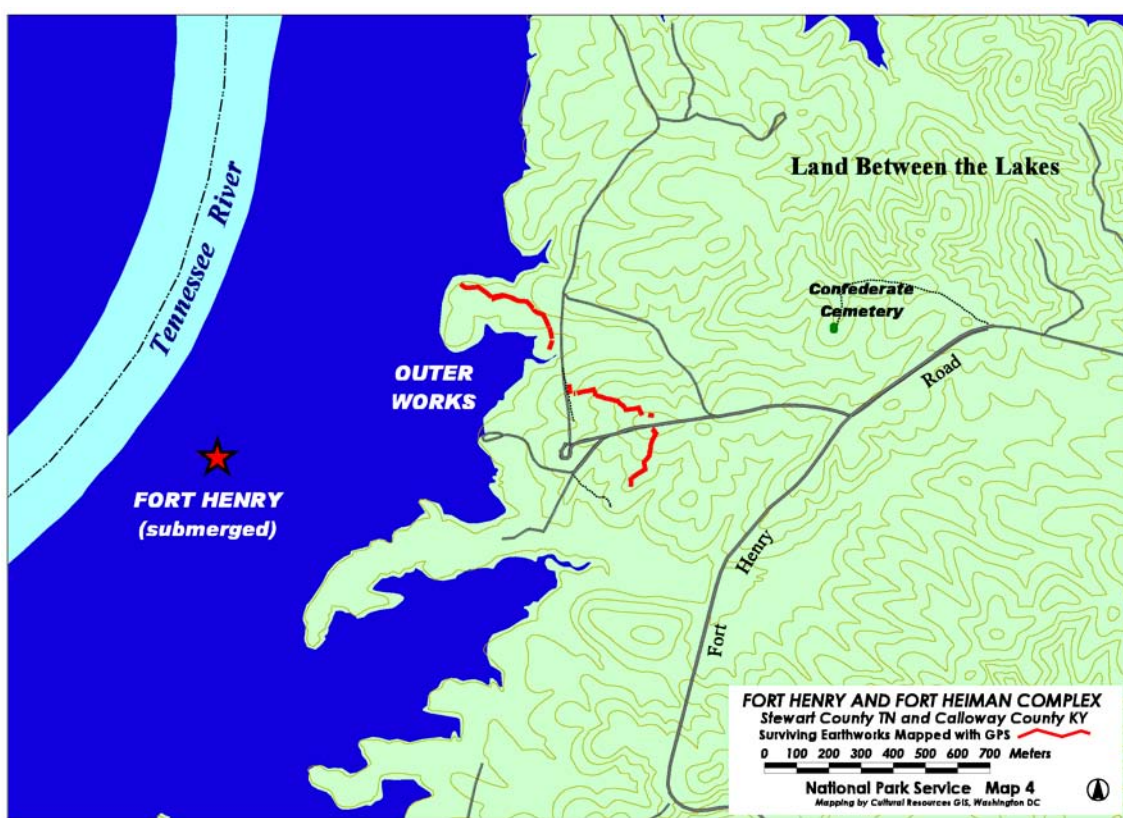


Figure 1-13. Fort Henry submerged beneath Kentucky Lake



Figure 1-14. Surviving outer earthworks at Fort Henry

Operational and Management Issues

Although the boundary of the Fort Henry site is indistinct and mostly submerged under the waters of Kentucky Lake, it is managed by the USFS as part of LBL National Recreation Area. Extant Civil War-era resources that are significant to and critical to an understanding of, the site include the outer earthworks, fort remnants (both submerged and exposed above the water line), Confederate graves, historic trails/roads, and archeological resources associated with iron furnaces. Adjacent land use

consists of heavily wooded lands in the national recreation area. Public access is assured, and the area provides opportunities for interpretive/recreational trails, interpretive media, small-scale parking, and non-personal services.

Protection of Park Resources

The Battles of Forts Henry and Donelson, as well as subsequent events in the area during the Civil War, are integral parts of the efforts by both the Confederates and Federals to control the two major water transportation routes in the Confederate west. Thus, the Fort Henry site would protect a resource associated with a key Civil War military operation in the “Federal Penetration Up The Cumberland Rivers (1862)” Campaign in the Main Western Theater Minus the Gulf Approach (one of the 384 principal battlefields of the Civil War as identified by the Civil War Sites Advisory Commission) and would afford the opportunity to relate the battle to both Forts Donelson and Heiman.



Figure 1-15. Confederate Cemetery near Fort Henry



Figure 1-16. Unknown Confederate gravesite

Critical resources include the outer earthworks, fort remnants (both submerged and exposed above the water line), Confederate graves, historic trails/roads, and archeological resources associated with the area's iron furnaces. Although the historic setting of Fort Henry that is essential for interpreting the significance of the battle has been preserved as part of Land Between the Lakes National Recreation Area, much of the fort remains lie beneath the waters of Kentucky Lake. Interpretive/recreational trails, as well as some historic road traces, have fallen into disuse and become overgrown, and the outer earthworks, although protected by the forest canopy, have been subjected to erosion, high water from the lake, logging, and the road and trail construction. Thus, the need for additional resource protection is necessary. Enhanced protection of the historically significant resources associated with Fort Henry can be better provided by the combined efforts of the U. S. Forest Service and the National Park Service.

Feasibility of Administration

The land on which Fort Henry sits is currently administered by the U.S. Forest Service. Thus, no land acquisition costs would be involved with the effort to enhance resource protection and interpretation at the site. However, because the National Park Service could be involved with resource preservation and interpretation, the agency could share in the costs associated with such activities.

Alternatives to National Park Service Management

Fort Henry would continue to be administered by the United States Forest Service. However, cooperative efforts between that agency and the National Park Service could enhance resource preservation and visitor use of the site. There is no other recognized management entity capable of providing for resource protection, interpretation, and visitor use of the Fort Henry site.

1.3.3 Fort Donelson, Stewart County, Tennessee

Historic Context

Fort Donelson, Tennessee, guarding the Cumberland River, became the site of the first major Confederate defeat in the Civil War. Victory at Donelson started Union Brig. Gen. Ulysses S. Grant on his road to Appomattox and the White House. His cool judgment under pressure saved the day after the Confederates threatened to break his lines, although errors by his opponents handed him a victory that he did not fully earn.

Possession of much of Tennessee and Kentucky, both vital to the South, depended on the outcome of the battle at Fort Donelson. When the war began in April 1861, Kentucky declared its neutrality in response to deep cleavages of opinion among its citizens. Considering neutrality impossible to maintain, both the North and South maneuvered for position once Kentucky was opened to military operations. The Confederates constructed fortifications on both the Tennessee and Cumberland rivers just south of the Kentucky line, building Fort Henry on the Tennessee River, on ground susceptible to flooding, but choosing higher ground for Fort Donelson on the Cumberland.

After the surrender of Forts Henry and Heiman to Union forces under Grant on February 6, 1862, most of the Confederate troops fled to Fort Donelson, 11 miles to the east. Grant followed, after sending the Union gunboats back down the Tennessee River and over to the Cumberland.

Confederate Gen. Albert Sidney Johnston, overall commander in the West, concentrated his troops at Fort Donelson, anticipating the loss of Nashville if Donelson fell. Torn between defending and abandoning the fort, Johnston took a middle course that led to disaster. He was criticized later for sending so many troops to Donelson without sending his entire force and taking command himself. By the time Grant arrived with approximately 15,000 men, Donelson held nearly 15,000-17,000 Confederate soldiers under the command of three generals. Brig.

Gen. John B. Floyd, who was commanding Donelson, had been the Secretary of War in the cabinet of President James Buchanan.

Brig. Gen. Gideon J. Pillow was second-in-command, but Brig. Gen. Simon B. Buckner, a West Point graduate and old friend of Grant, was the only professional soldier of the three.

Fort Donelson consisted of earthworks surrounding about 15 acres (Figure 1-17), where the garrison lived in huts. Two batteries – the Lower and Upper River batteries – outside the fort commanded the river with their 12 heavy guns (Figure 1-18), and about two miles of fortifications, protecting both the artillery encampment and the nearby hamlet of Dover, stretched from Hickman Creek on the right to Lick Creek on the left. The creeks, flooded in February, protected both flanks. Confederate officers and engineers had complained continuously of shortages of men and supplies to complete the fortifications, but Federal forces encountered formidable earthworks fronted by trees felled, tangled, and sharpened to impede attack.

Grant advanced on February 12 and began to encircle Fort Donelson the next day, ordering Brig. Gen. Charles F. Smith's division to probe the Confederate right, commanded by Buckner, and Brig. Gen. John A. McClernand's division to probe the Confederate left, under Brig. Gen. Bushrod R. Johnson. Grant found the Confederate lines too strong and well positioned for assault. Relying on this strength, however, the Confederates permitted Union troops to complete a virtual encirclement, leaving only a small gap on their right, and to select high ground for their base.

Union Flag Officer Andrew H. Foote's gunboat fleet, consisting of the ironclads, *St. Louis*, *Pittsburgh*, *Louisville*, and *Carondelet*, and the timberclads, *Conestoga* and *Tyler*, arrived late at night, carrying fresh troops, and a brigade commanded by Brig. Gen. Lewis Wallace marched from Fort Henry. Ultimately, Grant's army numbered approximately 27,000.



Figure 1-17. Earthworks at Fort Donelson

Both armies froze when overnight temperatures unexpectedly fell to 12 degrees. On February 14 Foote tested the water batteries with his six vessels and the batteries prevailed, inflicting heavy damage on the flotilla. Although heavily outgunned, artillerists found the range when the gunboats came too close, and the fleet was forced to retreat.

During the morning of February 15 Grant consulted

Foote on his flagship, where he lay immobilized by a wound inflicted by the Confederate batteries. While they discussed their next move, Pillow struck the Union right with devastating force. Buckner's line was denuded as the Confederates massed troops to break free of encirclement. McClernand's right began to roll back on the center until reinforcements from Wallace halted the advancing Confederates. When the fighting slackened, Pillow held the Forge Road, leading toward Nashville and safety.

Just as the way seemed clear for a Confederate breakout from Donelson, the Southern troops were ordered to return to their entrenchments – a result of confusion and indecision among the Confederate commanders. Stung by the morning offensive, the Union troops were confused and demoralized until Grant returned. Inspecting the haversacks of fallen Confederates, which contained rations for three days, Grant concluded that the assault represented a desperate effort to escape. Grant immediately launched a vigorous counter-attack, retaking most of the lost ground and gaining new positions as well. Smith's division was successful against Buckner's weakened line, which put Union troops inside the Confederate fortifications and threatened the redoubt. The way of escape for the Confederates was closed once more.



**Figure 1-18. Lower River Battery, Fort Donelson;
Cumberland River behind**

Smith's division was successful against Buckner's weakened line, which put Union troops inside the Confederate fortifications and threatened the redoubt. The way of escape for the Confederates was closed once more.

The three days of fighting had left the armies close to their initial positions. Grant's reinforcements, however, were much exaggerated in the Confederate imagination, and Floyd and Pillow had squandered their only opportunity to evacuate. During the evening of February 15, the Confederate commanders planned the surrender. Floyd relinquished command to Pillow and Pillow to Buckner. The top brass slipped away to Nashville by water with about 2,000 men. Col. Nathan Bedford Forest led his cavalry and a few infantry safely by land to Nashville.

When Buckner asked Grant to appoint commissioners to negotiate the terms of capitulation, Grant responded that, "no terms except an unconditional and immediate surrender can be accepted." Although he denounced this response as "ungenerous and unchivalrous," Buckner had little choice but to surrender. Buckner and Grant met at the Dover Hotel (Figure 1-19) to work out the details.

Grant lost 2,852 killed or wounded, and Floyd lost about 2,000. But Grant took about 15,000 prisoners, 48 military pieces, and other war materiel the South could not afford to lose. The

surrender, which was the first step toward the Confederate loss of the West, ensured that Kentucky would stay in the Union as the Confederates fell back from the southern part of that state and much of Middle and West Tennessee, including Nashville. The Tennessee and Cumberland rivers, and railroads in the area, became vital Federal supply lines and invasion routes to the heartland of the South for the Union armies, and Nashville was developed into a huge Federal supply depot. Grant won fame and promotion to

major general for his victory and attained stature in the Western Theater, earning the *nom de guerre* “Unconditional Surrender,” while both Floyd and Pillow lost command.



Figure 1-19. Dover Hotel, restored to its 1862 appearance when CSA’s Buckner surrendered to USA’s Grant

Significant Resources or Opportunities for Public Enjoyment

The Battle of Fort Donelson, along with the Battle of Fort Henry, constituted the first major victory of the Union forces in the Civil War and the outcome that earned Brig. Gen. Ulysses S. Grant his promotion to major general and the nickname “Unconditional Surrender Grant.” As a result of the capture and occupation of these two forts, as well as Fort Heiman, the Tennessee and Cumberland rivers — two major transportation routes in the Confederate west – became Union highways for the transport of men and material to the Deep South.

Fort Donelson was established by Congress as a national military park and placed under the administration of the War Department on March 26, 1928. Administration of the national military park, along with its adjacent national cemetery, was transferred to the National Park Service on August 10, 1933. The Surrender House (Dover Hotel) and landing on the Cumberland River were added to the park on September 8, 1960. On August 9, 1985, the national military park was redesignated by Congress as Fort Donelson National Battlefield. Today, the national battlefield consists of 551.69 acres, and the adjacent national cemetery (Figure 1-20) consists of 15.34 acres.

In 1993, the Civil War Sites Advisory Commission listed the Battle of Fort Donelson as one of the 384 principal battles of the Civil War. The commission identified Fort Donelson as a Priority I.1. Class A battlefield. This identification meant that there was critical need for nationwide action to preserve and protect this battlefield because it had fair integrity, was subject to a high level of threats, and possessed less than 20 percent of the core area battlefield as identified by

American Battlefield Protection Program. Furthermore, the commission designated the battle as having Class A military importance, because it had a decisive influence on a campaign (Federal Penetration Up the Tennessee and Cumberland Rivers, 1862) and a direct impact on the course of the Civil War.



Figure 1-20. View of Fort Donelson National Cemetery

Fort Donelson National Battlefield, including extant earthworks, rifle pits, and batteries, as well as lands on which military operations occurred, affords the opportunity to relate significant aspects of the Battle of Fort Donelson. Although impacted by erosion, minimal park development, and expansion of the Dover community, the national battlefield and cemetery,

along with their immediate surroundings, retain a high degree of their historic pastoral and woodlands character. They are easily accessible by national and state highways and town and county roads, and offer scenic vistas in which significant elements of the battle can be interpreted. The battlefield, along with the Fort Henry Site, also provides the opportunity to interpret Union efforts to control the two major transportation routes – the Cumberland and Tennessee Rivers – in the Confederate west.

Nevertheless, the current acreage within the boundaries of the national battlefield is inadequate to tell the full story of the battle. As stated earlier, the lands within the current battlefield boundaries comprise less than 20% of the core battlefield, and the battlefield primarily protects Confederate earthworks and relates to Confederate military operations at Fort Donelson. To enable the National Park Service to interpret key elements of the Union story at the fort, and thus provide visitors with a more comprehensive understanding of the significant elements of the Battle of Fort Donelson, certain lands should be added to the national battlefield. These parcels, described below, are critical to the public's understanding of one of the principal 384 Civil War battlefields.

Operational and Management Issues

The core area of Fort Donelson National Battlefield is one mile west of downtown Dover, Tennessee (a town of nearly 1,500 residents and the seat of Stewart County), and three miles east of Land Between the Lakes National Recreation Area on the north side of U.S. 79. Portions of the battlefield extend south of the highway west of Sandy Road and along a narrow park road

corridor that connects the Maney's Battery, French's Battery, and Forge Road sites. The Dover Hotel is at the northeast edge of the town along the shore of Lake Barkley.

Land use surrounding the battlefield consists of residential grid development in the town and modest, low-density residential development along the town and county roads that extend outward from the downtown area. Outside of the downtown area much of the land in the vicinity of the battlefield remains forested or pastoral. Opportunities for an expanded visitor experience remain, including additional interpretive/ recreational trails, interpretive media, waysides, small-scale parking, and non-personal services.

Protection of Park Resources

Although the historic resources within the current boundaries of Fort Donelson National Battlefield afford the opportunity to relate significant aspects of the Battle of Fort Donelson, the resources relate primarily to Confederate fortifications and operations. Moreover, the current boundaries of the battlefield encompass only about 20% of the core area of the historic battlefield as identified by the American Battlefield Protection Program.

To enable the National Park Service to interpret key elements of the Union story at the fort, and thus provide visitors with a more comprehensive understanding of the significant elements of the historic events that occurred at the battlefield, certain lands should be added to the national battlefield. The recommendation to include lands into Fort Donelson NB was based on a three-fold test. First, the area had to be within the core area of the battlefield. Historic discussions of each parcel follow this section. Second, the land must retain a high degree of integrity. Third, the land must be owned by willing sellers. The parcels listed in this study each meet this test.

As the map of the core area illustrates (Figure 1-21), there is much land of the battlefield not included in these recommendations. While this area would meet the historical test for inclusion, it would not meet one or both of the other requirements. The following parcels recommended for inclusion are critical for a complete interpretive story of the important events occurring here in 1862.

Forge Road Parcel. The Confederate surrender of Fort Henry on February 6, 1862 forced both armies to evaluate their positions. The Union Army had to decide how to best take advantage of the victory while the Confederate Army tried to deal with the defeat and loss of control of the Tennessee River.

Realizing that Grant would likely attack Fort Donelson next and believing that Fort Donelson could not be held against Grant's forces, Confederate leaders decided to send reinforcements to Fort Donelson to delay Grant while adjustments were made elsewhere along the Confederate line. Thus, a much larger Confederate army was waiting when Grant's army began arriving and surrounding Fort Donelson on February 12, 1862, than had been at Fort Henry.

Grant surrounded Fort Donelson and waited for the Union gunboats to attack. The gunboats attacked the river fortifications on February 14, but Confederate positions proved too strong and

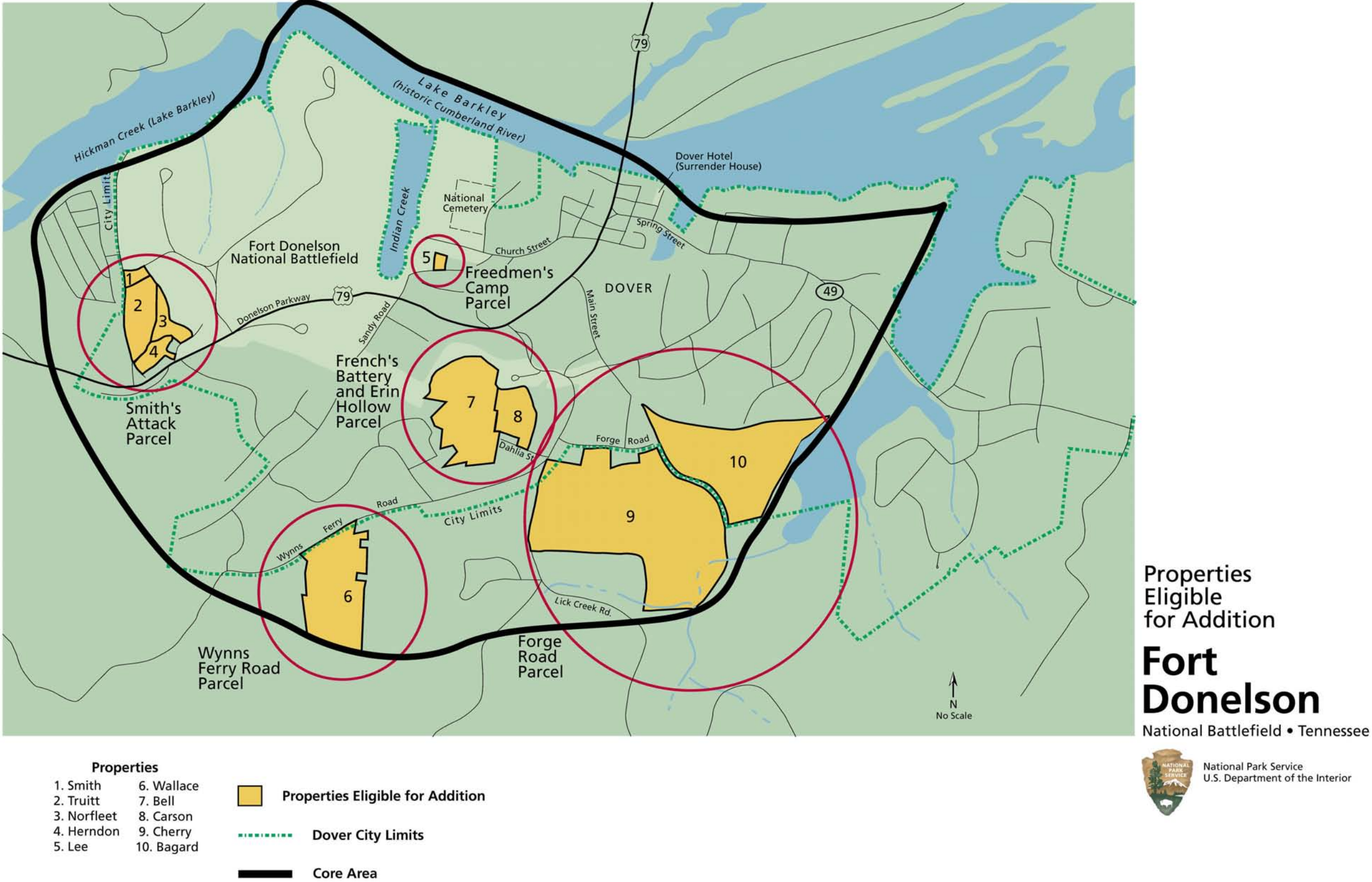


Figure 1-21. Properties eligible for addition to Fort Donelson National Battlefield

the boats fell back downstream. Grant began to contemplate a siege, but the Confederate generals decided their army had delayed Grant long enough. They decided to leave the safety of their earthworks and attack the Union right flank to open an escape route to Nashville, Tennessee. The Confederates decided to position most of their army opposite the Union right flank, attack at daybreak, and open roads leading to Nashville. At daybreak on February 15, the attack was launched. The extreme Union right was pushed back fairly easily as this concentrated Confederate attack pressed them. They fell back to other units of Brig. Gen. John A. McClernand's division and began to hold. McClernand's division turned and met the Confederate attack, and for about three hours fought battle line to battle line while slowly and grudgingly giving ground. Lack of ammunition and the determined Confederate attack forced McClernand's division to give way.

This three-hour time period saw the heaviest infantry fighting of the battle. In this general area near the Forge Road, 70 percent of the Union casualties fell. Confederate casualty records are not as good, but we can assume an equal or higher percentage of their casualties fell in this same area. Visiting Fort Donelson National Battlefield and not being able to see this area of the 1862 battlefield is like visiting Shiloh and being denied access to the Hornets Nest, visiting Gettysburg and not seeing the area of Pickett's Charge, or visiting Antietam and not seeing Bloody Lane. Visitors cannot completely appreciate these significant battles without viewing their critical areas. There are two parcels of land for sale in the Forge Road area of approximately 162 acres – in Figure 1-21, the Cherry and Bagard properties, respectively. Figure 1-22 shows a scene from the Bagard tract. The Civil War Preservation Trust purchased one of these parcels; a portion of the other parcel was sold for apartment construction. Acquisition of these parcels would protect an important part of the battlefield from development and would improve the visitor's understanding and appreciation of Fort Donelson because the area would be added to the park's tour route.



Figure 1-22. Bagard tract – scene of heavy fighting at FODO

French's Battery and Erin Hollow Parcels. Following the success of the Confederates in the aforementioned Forge Road, McClernand's division fell back hoping to regroup. Brig. Gen. Lew Wallace decided to bring his division to McClernand's aid. To accomplish this, Wallace left his position in the Union center, crossed Indian Creek, and formed a battle line across Wynns Ferry Road. This line formed a new obstacle for the attacking Confederate forces.

The French's Battery and Erin Hollow parcels are located between the Confederate earthworks (park boundary) and the Wallace position along Wynns Ferry Road (south of park boundary) and are contiguous to the present park boundary. Men from Brig. Gen. Simon B. Buckner's Division fell back to their earthworks to regroup and issue ammunition. Once they were reformed into battle lines, they charged across these parcels and attacked the Wallace position on Wynns Ferry Road. These attacks were unsuccessful, and the Confederate offensive began to falter. Although the desired escape routes were open, the Confederate generals decided not to make their escape, but rather to return inside their earthworks without leaving forces to protect those routes. This decision would result in the capture of the Confederate force at Fort Donelson. This Confederate withdrawal of forces crossed the French's Battery and Erin Hollow parcels.

Fort Donelson National Battlefield is located within the city limits of Dover, Tennessee. There are pressures from all directions to develop property that is part of the battlefield and on property contiguous to park boundaries. These two parcels – the Bell and Carson properties in Figure 1-21 – are for sale. Acquiring them would protect and preserve more of the battlefield and prevent some development next to the current battlefield boundaries.

Wynns Ferry Road Parcel (Grant Rallies the Troops). Before daylight on February 15, Grant decided to travel several miles downstream to the riverbank where the Union gunboats had tied up. He was unaware of the impending Confederate attack on his right flank. As the Confederate attack pressed forward, riders were sent and eventually found Grant at the river. They informed him of the dire situation, and Grant began making his way back to his troubled lines. Hurrying along his lines, Grant found McClelland's division trying to reform and Wallace's division on Wynns Ferry Road. He found officers and men wandering around not knowing what to do. Captured Confederate soldiers were brought to Grant with bed rolls and rations and exclamations that the Confederates were prepared to fight Union troops all the way back to Fort Henry. Grant handled the situation well. He deduced quickly from the captured soldiers that they were trying to leave. He also concluded that if the Confederates hit hard in one place, other positions must be poorly defended. He ordered that the area lost earlier in the day be retaken and that a poorly defended position be attacked. Confederate inability to take this position and Grant's ability to rally his troops assured a Union victory.

Grant had been given a cigar while inspecting the gunboats. War correspondents traveling with the Union Army described for their readers how Grant, chewing on a dead cigar, rode up in a moment of destiny and how he saved the battle by arriving just in time to turn defeat into victory. These news accounts and the demand for an "Unconditional Surrender" gave Grant a new nickname and helps to explain how a clerk in a leather store could rise to major general in command of the Union army and become its first hero in such a short time. Grant was propelled into national prominence, eventually accepting Confederate surrender at Appomattox. His popularity ultimately carried him to the White House. The early victories he achieved had a great effect on Grant's career, the outcome of the Civil War, and American history.

The effect the victory at Fort Donelson had on Grant's career is an important interpretive theme for this park. This parcel (#6 in Figure 1-21) would protect some of the area where Wallace's division deployed to stop the Confederate attack and the area where Grant rode up to his moment

of destiny. The visitor experience at Fort Donelson would be improved by providing another opportunity to interpret this important aspect of the battle.

This area is not contiguous to park boundaries. It is in an area of development. It is important to take the opportunity now to protect, preserve, and interpret this pristine part of the core battlefield for future generations.

Smith's Attack Parcel. By daybreak on February 15, Confederate generals had massed their forces opposite the Union right and were preparing an attack in order to open an escape route to Nashville, Tennessee. The attack was launched and was initially successful. The Union right was pushed off the battlefield and the escape routes were opened. When Grant reached the battlefield and made his assessment of the situation, he concluded that the Confederates must have weakened their lines someplace else to be able to hit him so hard in this location. After rallying the troops on his right, he rode off to his left flank occupied by Brig. Gen. Charles F. Smith's division. Smith had been commandant of cadets at West Point when Grant was a cadet. Thus, Grant felt a little strange giving orders to his former superior, but he informed Smith that the enemy was trying to escape but had been stopped and must be demoralized. Now was the time to attack and carry the fort. Smith moved his division against the Confederate works in his front. Because most of the Confederates were massed on the other side of the earthworks (more than a mile away), Union soldiers were able to climb the hill and sweep over the Confederate works. Reinforcements and lateness in the day prevented Smith's division from taking the main fort. Still, the Union had a firm grip on the Confederate right flank. During the night of February 15, Union soldiers camped where Confederate soldiers had camped the night before. This action gave the Confederate generals another reason to consider surrender as they discussed their next course of action.

During this attack a corporal in the color guard picked up the flag after other color guards had been wounded. Although wounded himself, the corporal bore the flag to the end of the engagement. For this feat Voltaire Twombly was awarded the Medal of Honor. His Medal of Honor is on display in the Fort Donelson National Battlefield Visitor Center.

This parcel is contiguous to the park boundary. This area was between Union and Confederate lines. The right flank of Smith's division crossed this area during the attack. It is also very near the visitor center. Acquiring the parcel would bring more of the core battlefield within the park boundary and further preservation of the cultural landscape near the visitor center.

Freedmen's Camp Parcel. The effects of the fall of Fort Donelson would be felt across the country economically, socially, and militarily. In the middle Tennessee area, it had an immediate effect on the slave population. The presence of the Union Army provided another opportunity for slaves willing to seek freedom. Grant, lacking any established policy from Washington, decided not to return slaves to their owners and put them to work helping the Union Army. As word of the surrender went out across the land, freedom-seeking slaves began leaving their owners and traveling secretly to Dover, Tennessee, and the protection of the Union Army. Before long, fugitive slaves were housed in sheds, cellars, and barns in town. If not free to come and go as they pleased, they were at least protected from their owners as long as they were under the watchful eye of the Union army. Unofficial and later formal camps were set up for them.

Thousands of freedom-seeking former slaves came through this camp during its existence. Some men were recruited into the Union Army. Soldiers and civilians helped a few of the former slaves to travel farther north in hopes of finding the freedom they so desperately desired.

This parcel is contiguous to the park boundary and included the area of the Freedmen's Camp. Acquiring this parcel would protect the site and provide an excellent location to interpret this largely untold and misunderstood story. Fort Donelson National Battlefield is a designated site for the National Underground Railroad Network to Freedom program, and this parcel would enable the National Park Service to interpret this significant theme.

These additional areas have relatively high potential for archeological survey and research, and they provide excellent opportunities for interpretive/ recreational trail possibilities, interpretive media, waysides, related exhibits, small-scale off-road parking, and non-personal services.

In addition, steps should be undertaken, in cooperation with the Corps of Engineers, to protect and interpret the principal viewshed along the west shore of Lake Barkley from the lower battery in the national battlefield.

Although impacted by erosion and the expansion of the Dover community, these lands, along with their immediate surroundings, retain a high degree of their historic woodlands and pastoral character, are easily accessible by national and state highways as well as by town and county roads, and contain historically significant resources and scenic vistas in which significant elements of the Battle of Fort Donelson can be interpreted. The construction of more roads and homes and further subdivision and development of these lands could compromise the historically significant battlefield resources and substantially change the historic setting that is essential to interpreting the significance of this important Civil War battle.

Feasibility of Administration

Aside from the existing development in Dover and the residential development along the roads that extend outward from the downtown area, much of the battlefield area and its immediate surroundings retain their historic woodland and pastoral character and could be easily managed. The additional lands identified for acquisition are entirely in private ownership. Some of the aforementioned lands recommended for addition to the national battlefield are already under contract to the Civil War Preservation Trust, which is purchasing them for donation to the National Park Service. In addition, this organization and the State of Tennessee have indicated interest in acquiring other historically significant lands that are contiguous and noncontiguous to the battlefield for donation to the National Park Service.

Landownership issues would drive the final configuration of the historic national battlefield to avoid conflicts. Private residential properties adjacent to the road networks would not be acquired unless specific resource protection or visitor use needs are identified. Management costs would be minimal, primarily including periodic mowing, routine law enforcement patrols, trash collection, and perhaps partnerships with local governments and/or private organizations to obtain services for development of a seasonal educational/interpretive program and personal

visitor services. Aside from acquisition costs, there would be no perceived short-term development costs. Long-term development costs would result from interpretive/ recreational trail and access point development, construction of waysides and other interpretive media, and small-scale parking areas. Modest expenditures would also be needed to rehabilitate and afford preservation treatment to some of the historic resources.

Alternatives to National Park Service Management

The long-term preservation and visitor use of the aforementioned lands in the vicinity of Fort Donelson National Battlefield are in jeopardy if left in private ownership. Thus, various state and private entities, such as the Civil War Preservation Trust and the State of Tennessee, are actively interested in purchasing lands that are historically significant to the national battlefield for donation to the National Park Service. These lands, to be added to the national battlefield, are contiguous as well as noncontiguous to the current battlefield boundaries. No other recognized management entity capable of providing for the necessary levels of resource preservation, interpretation, and visitor use of these lands has emerged. Other regulatory mechanisms for protection of these lands, such as county zoning, are significantly limited.

1.4 SCOPE OF THE BAS & EA

This EA analyzes the potential environmental impacts resulting from different management alternatives for possible boundary adjustment at Fort Donelson National Battlefield that may be adopted by the National Park Service (NPS). Two different management alternatives are considered in this Boundary Adjustment Study and Environmental Assessment, and are described in Section Two of the document. The decision to be made by the lead agency, the NPS, involves determining whether or not to adjust the boundaries of FODO to include privately-owned Fort Heiman and an additional 10 private properties identified within the core area of the battlefield. This decision may involve making recommendations to Congress in the form of a legislative proposal.

If the boundaries of FODO are expanded to add any or all of these properties, the NPS would likely undertake some appropriate development at each of the additional properties to enhance visitor use and experience. Details of any such developments are still in the preliminary planning phase, and no site-specific development plans have been determined. These developments will be discussed and analyzed in detail in separate future NEPA documentation, once a management alternative is selected and specific plans for development are identified and more fully refined.

In order for this EA to serve also as a planning document, the analysis of potential environmental and socioeconomic impacts that may result from the different management alternatives will be supplemented by a brief and broad description of potential impacts that should be considered in subsequent NEPA documentation regarding potential developments to enhance visitor experience. These potential impacts are discussed by resource area under Connected Actions and Cumulative Impacts throughout Section Four of this Boundary Adjustment Study and Environmental Assessment (BAS & EA).

Since these developments are not part of the scope of this BAS & EA or the decision to be made regarding the boundaries of FODO, the potential impacts that should be considered during planning of these developments will not affect the ratings or comparison of management alternatives presented in this BAS & EA, or the selection of the environmentally preferred alternative, discussed in Section 2.4. However, as a result of these additional impact discussions, the range of issues and impact topics to be analyzed in this EA (see Section 1.5 below) has been broadened to include all resources that may be affected by future developments, not just those resources that would be affected by the management alternatives analyzed in detail in this EA.

1.5 ISSUES AND IMPACT TOPICS

Issues can be defined as the relationship between the Proposed Action or its alternatives and the human and natural environment. Issues are used to define which environmental resources may experience either detrimental or beneficial consequences from an action; they do not predict the degree or intensity of potential consequences that might result from an action. Issues were identified by the NPS, State and Federal agencies, a review of similar construction projects, and by the public during the scoping process (see Appendix D of this BAS & EA).

From these issues, impact topics were developed for each affected environmental resource area. Impact topics address the potential consequences on the human and natural environment that might result from the Proposed Action or its alternatives. Impact topics are used to define and focus the discussion of the affected environment for each resource area, and the analysis of the potential environmental consequences of an action. These topics also derive from relevant Federal laws, regulations, and orders, as well as NPS Management Policies and resource area expertise. A summary of impact topics analyzed and dismissed from further analysis is provided below, along with the rationale for their inclusion or dismissal.

As discussed in Section 1.4 above, the analysis of potential environmental and socioeconomic impacts that may result from the different management alternatives will be supplemented by a brief and broad description of potential impacts that should be considered in subsequent NEPA documentation regarding potential NPS developments to enhance visitor experience. As a result, the range of issues and impact topics to be analyzed in this EA has been broadened to include all resources that may be affected by future developments, not just those resources that would be affected by the management alternatives analyzed in detail in this EA.

1.5.1 Impact Topics Analyzed

The following issues and impact topics are analyzed in the environmental assessment of this BAS & EA:

Natural Resources

Soils and Topography: Soils and topography are anticipated to be beneficially impacted as a result of the expansion of FODO's boundaries, and NPS management of the affected properties. In addition, potential impacts on these resources may result from future NPS developments at

Forts Heiman and the battlefield core area properties. Therefore, soils and topography are included in this analysis.

Water Resources: Water resources are anticipated to be beneficially impacted as a result of the expansion of FODO's boundaries, and NPS management of the affected properties. NPS Management Policies (2001) require water quality protection consistent with the Clean Water Act (CWA). In addition, potential impacts on these resources may result from future NPS developments at Forts Heiman and the battlefield core area properties. Therefore, water resources have been included in this analysis.

Air Quality: Air quality has the potential to be affected by increased vehicular traffic and associated emissions as a result of increased visitation to Fort Heiman and Fort Donelson. Consideration of air quality impacts are required by the Clean Air Act (CAA) and NPS Management Policies.

Vegetation and Wildlife: Trampling of vegetation and disturbance of wildlife may occur as a result of increased visitation with the expansion of FODO's boundaries to include Fort Heiman and the battlefield core area properties. Certain trees may also be removed at either site to protect cultural resources present on those properties (particularly surviving earthworks). In general, vegetation and wildlife are anticipated to benefit as a result of NPS management of the affected properties. In addition, impacts may occur on vegetation and wildlife as a result of potential future NPS developments on properties at Fort Heiman and the battlefield core area properties.

Species of Special Concern (Threatened, Endangered, Candidate, and Rare Species): According to the United States Fish and Wildlife Service (USFWS), four Federally listed threatened or endangered species are documented from Calloway County, Kentucky, and six such organisms in Stewart County, Tennessee. NPS management of Fort Heiman and the battlefield core area properties may beneficially impact these species, if present on the properties. In addition, potential future NPS developments could affect these species, if present.

Cultural Resources

Consideration of cultural resource impacts is required under the National Historic Preservation Act (NHPA), NEPA, the 1916 NPS Organic Act, and NPS Management Policies. Expansion of Fort Donelson's boundaries to include Fort Heiman and the battlefield core area properties, and associated NPS management, would enhance public understanding and knowledge of the significance of historic/cultural resources in the region, and allow for increased protection of cultural resources. In addition, potential future NPS developments at Fort Heiman or the battlefield core area properties have the potential to adversely affect historic/cultural resources.

Visitor Use and Experience

Expansion of FODO's boundaries, and associated NPS management, would enhance public understanding and knowledge of the significance of historic/cultural resources in the region.

Interpretive programs would be developed by the NPS to enhance visitor experience in the area. The Proposed Action investigated in this EA recognizes the need to promote interpretation and visitor use of significant historic resources associated with the battles of Fort Henry and Fort Donelson.

Expansion of FODO boundaries by adding Fort Heiman and the battlefield core area properties will increase the amount and types of recreational opportunities in the region, especially for “heritage tourism.” Increased area visitation may increase regional recreational use or place constraints on existing area recreation. Recreation opportunities also have the potential to be impacted as a result of future NPS developments at Fort Heiman and the battlefield core area properties.

Socioeconomic Environment

Population, Economy, and Social Conditions: The management alternatives analyzed in this EA have the potential to create permanent if modest employment opportunities and result in long-term increases in local income, spending, and revenue in both Calloway County, KY and Stewart County, TN. Increased visitation to the area as a result of adding Fort Heiman and the battlefield core area properties to Fort Donelson National Battlefield also has the potential to increase local spending and generate revenues. Expansion of FODO by adding Fort Heiman and the battlefield core area properties may change land values on nearby private property. In addition, potential future NPS developments at Fort Heiman and the battlefield core area properties may result in temporary employment opportunities and increases in local income, spending, and revenue.

Utilities and Public Services: The need for utilities and public services may increase modestly with increased area visitation as a result of adding Fort Heiman and the battlefield core area properties to FODO. In addition, utilities and public services have the potential to be impacted to a modest extent by future NPS developments at Fort Heiman and the battlefield core area properties.

Transportation

If Fort Heiman and the battlefield core area properties were added to FODO, increased visitation would create greater traffic volumes along the Calloway County, Stewart County and LBL roads that provide access to Fort Heiman, which could affect the level of service on these roads as well as the perception on the part of the area’s rural residents of increased traffic. In addition, modest transportation impacts may result from potential future NPS developments, particularly from construction activities.

Land Use

Expansion of FODO’s boundaries by adding Fort Heiman and the battlefield core area properties would change land ownership and management, especially at the former site, which is privately-owned and has already been subdivided into a number of parcels. The management alternatives have the potential to cause short- and long-term changes in land uses, but are unlikely to conflict

with zoning and planning in the region. Land use also has the potential to be impacted as a result of future NPS developments at Fort Heiman and the battlefield core area properties.

Visual Resources

Impacts on visual resources and aesthetics as a result of the enlargement of FODO's boundaries to include Fort Heiman and the battlefield core area properties, and associated NPS management of these properties, may result from increased area visitation and associated traffic, as well as the removal of some vegetation on the properties for the protection of cultural resources. Both at Fort Heiman at the battlefield core area properties, visual resources are likely be impacted beneficially by stopping the further construction of private dwellings and removal of trees to accommodate these. In addition, the visual quality of some sites may be altered as a result of future NPS developments.

Human Health and Safety

Addition of Fort Heiman and the battlefield core area properties to FODO would likely increase traffic on several access roads to these properties with attendant potential safety risks and conflicts between visiting motorists and local motorists, pedestrians, and residents along the affected roadways. In addition, potential impacts on health and safety may result from future NPS developments at Forts Heiman and the battlefield core area properties.

1.5.2 Impact Topics Dismissed From Further Analysis

The following issues and impact topics were dismissed from further analysis in this EA:

Natural Resources

Geology: None of the management alternatives analyzed in this EA have the potential to affect the geology of the area. In addition, none of the potential future NPS developments being considered would involve any activities, such as blasting, that would alter the geology of the area. Therefore, this topic is dismissed from further analysis.

Prime Farmlands: Neither the Fort Heiman nor the battlefield core area properties contain prime farmlands. The former consists of bluffs, hilltops, and steep slopes while the latter's gentler slopes are Federally owned forestland; both site possess soils that are particularly unsuited to agriculture, according to soils surveys. Furthermore, the different management alternatives would result in few or no adverse impacts to these soils. Therefore, this topic is dismissed from further analysis.

Wetlands: The Fort Heiman site includes one or more small (< 0.2 acre) forested wet areas, or palustrine wetlands, along stream courses that could potentially qualify as jurisdictional wetlands. The battlefield core area properties do not appear to contain any such habitats. Because of NPS policies on wetland protection, wetlands at Fort Heiman would not be adversely affected by NPS ownership and management. Any future developments on the ground at either

Fort Heiman or the battlefield core area properties would strive to avoid delineated wetlands entirely. Therefore, this topic is dismissed from further analysis.

Floodplains: While Fort Heiman borders Kentucky Lake, it does not contain floodplains that would be impacted by the proposed boundary adjustment or potential future developments on the ground. Neither do the battlefield core area properties contain floodplains. Therefore, this topic is dismissed from further analysis.

Noise: Addition of Fort Heiman and the battlefield core area properties to Fort Donelson National Battlefield could potentially expose nearby residents along access routes to higher noise levels from visitation-related automobile traffic. However, in the context of existing traffic levels and the nature and volume of expected visitation, the incremental increase in noise is anticipated to be negligible. Therefore, this topic is dismissed from further analysis.

Waste Management: Waste management is not expected to be impacted substantially as a result of the management alternatives analyzed in this EA, although a modest amount of solid waste and litter may be generated as a result of increased area visitation. In addition, any waste generated as a result of future NPS developments at Fort Heiman and the battlefield core area properties will be small. Therefore, this topic is dismissed from further analysis.

Environmental Justice: Neither Fort Heiman, the battlefield core area properties, nor their vicinities have disproportionate concentrations of minorities or low-income residents (USCB, 2002). Thus, no disproportionate, adverse impacts on low income or minority groups are anticipated to result from any of the management alternatives analyzed in this EA. Therefore, this topic is dismissed from further analysis.

1.6 ORGANIZATION OF THE BAS & EA

A summary of the organization of this BAS & EA and the contents of the sections is shown in Table 1-1 below. The Table of Contents provides a more detailed outline of these chapters.

Table 1-1. Summary of the Organization of the BAS & EA	
Section	Contents
2 Alternatives Including the Proposed Action	<ul style="list-style-type: none"> • Description of the alternatives, including the No Action alternative • Alternatives considered, but eliminated from further study • Mitigation measures • Comparison of the impacts of the alternatives assessed
3 Affected Environment	<ul style="list-style-type: none"> • Description of the existing aspects of the natural and human environment, by resource area, that may be impacted by each alternative or by potential future NPS developments
4 Environmental Consequences	<ul style="list-style-type: none"> • Description of the methodology used to analyze environmental impacts resulting from each alternative, including definitions of impact terms • Analysis of potential direct, indirect, and cumulative impacts on the natural and human environment, by resource area, that would result from each alternative

	<ul style="list-style-type: none"> Brief and broad discussion of potential impacts from potential future NPS developments that should be considered in future NEPA documentation
<p>5 Consultation and Coordination</p>	<ul style="list-style-type: none"> Discusses relevant agency consultation during the BAS & EA development Provides a list of persons and agencies contacted for information during the BAS & EA development Describes public involvement activities implemented as part of the BAS & EA process
<p>6 Compliance With Federal and State Regulations</p>	<ul style="list-style-type: none"> Identifies regulatory compliance, including permits, necessary for implementation of the project
<p>7 References Cited</p>	<ul style="list-style-type: none"> List of references cited within the BAS & EA
<p>8 List of Preparers</p>	<ul style="list-style-type: none"> Identifies the members of the interdisciplinary team that contributed to the preparation of the BAS & EA
<p>Appendices:</p> <ul style="list-style-type: none"> A: Acronyms and Abbreviations B: Glossary C: Environmental Laws and Regulations D: Public Scoping and Agency Coordination E: Comments on the Draft BAS & EA F: Visitation at other NPS parks with military history themes 	<ul style="list-style-type: none"> List of abbreviations (and their definitions) used within the BAS & EA Definitions of terms used within the BAS & EA Relevant environmental laws and regulations for each resource area Provides supporting public involvement and agency consultation documents and information generated through the scoping process Provides a description of the public comment period on the Draft BAS & EA; Will contain comments received from the public and agencies on the Draft BAS & EA Provides figures on visitation at other units of the national park system with a Civil War or other military historical theme to aid in predicting visitation at Ft. Heiman and new FODO units

2.0 ALTERNATIVES INCLUDING THE NO ACTION

In addition to evaluating the historic resources at Fort Heiman, Fort Henry, and the 10 eligible battlefield core area properties, this study has explored differing management frameworks for those resources passing the test of eligibility. Two alternatives are presented for consideration. Both alternatives recognize the need for protection of significant historic resources associated with Fort Heiman, Fort Henry, and the battlefield core area properties, as they each relate to Fort Donelson National Battlefield. The differences the two alternatives are largely based on the level of NPS involvement. If properties are acquired by states, local authorities, or private trusts, the National Park Service would seek cooperative agreements with those organizations to assist in planning, protection, and operations. Partnerships with other agencies, educational institutions such as Murray State University, and private interests would also be sought to maximize operational capabilities and secure necessary visitor facilities.

In the No Action Alternative (A), ownership patterns would not change. Fort Heiman would continue in private hands, Fort Henry would continue to be owned and managed by the U.S. Forest Service, and the battlefield core area properties would continue to be privately owned or held by non-governmental organizations (NGOs). In Alternative B, the NPS would acquire title to approximately 350 acres at the Fort Heiman site, in addition to 10 battlefield core area properties comprising about 300 acres, while Fort Henry would continue to be owned and managed by the USFS. Both Alternatives A and B assume that the NPS would work as an active partner with other agencies and stakeholders in the protection, management and interpretation of these resources, to the extent permitted.

2.1 ALTERNATIVE A: NO ACTION

CEQ regulations (40 CFR 1502.14) require the assessment of the No Action alternative in NEPA documents. The No Action Alternative provides a baseline against which to measure the impacts of the other proposed alternatives. It traditionally describes what would happen if the agency were not to take the action in question. The No Action Alternative does *not* mean that the affected environment would remain static, that is, that nothing would change in the affected environment or on the affected properties. It only means that, in this case, the NPS would *not* proceed with the Proposed Action of acquiring and managing the subject properties. In fact, many natural processes and human trends *would* likely occur under the No Action Alternative that would indeed change the condition of historic and natural resources at Fort Heiman and the ten parcels within the battlefield core area.

Under this alternative no additions to Fort Donelson National Battlefield would be undertaken. The No Action Alternative would constitute the existing conditions approach to expansion of Fort Donelson. Essentially Fort Donelson would continue to have an authorized boundary of 600 acres (the existing acreage of Fort Donelson is 551.69 acres). Fort Henry would remain protected by the U.S. Forest Service, and Fort Heiman would remain in private ownership until and unless another organization interested in protection and interpretation of its resources came forward.

The National Park Service would continue to provide resource protection and manage visitor use at Fort Donelson. At Fort Heiman, the NPS would assist by offering technical support in the areas of historic preservation and interpretation to the best of its ability, with the aim of helping ensure protection of the resources, if requested. The NPS would also enter into cooperative agreements as necessary to support other public and private entities in their resource management efforts. Fort Henry would continue to be protected and interpreted by the U.S. Forest Service as a part of the Land Between the Lakes National Recreation Area. NPS would assist in protection and interpretation at Fort Henry if requested by the USFS and LBL.

2.1.1 Management Authority

The National Park Service would continue to manage Fort Donelson as it has in the past. Fort Henry would continue to be managed by the U.S. Forest Service as a part of the LBL National Recreation Area. However, neither the Fort Heiman site nor the ten battlefield core area parcels would be added to Fort Donelson National Battlefield. Fort Heiman and the ten battlefield properties would be protected by another managing agency, agencies, or non-profit preservation organization if one or more were to come forward (as has the Civil War Preservation Trust), or would remain in private ownership under the protection of existing land-use controls and existing historic preservation policies.

2.1.2 Boundary Recommendation

The acreage of Fort Donelson National Battlefield currently is 551.69 (Federal: 539.89; Nonfederal: 11.80). While certain properties adjacent to Fort Donelson have been acquired by support groups like the CWPT, those lands would not be added to the national battlefield under this alternative.

2.1.3 Resource Protection and Visitor Use

Resource protection and visitor use would continue to be provided at Fort Donelson by the National Park Service. At Fort Heiman, NPS would assist by offering technical support in the fields of historic preservation and interpretation to the best of its ability to ensure protection of the resources if requested. The bureau would also enter into cooperative agreements when appropriate to support other public and private entities in their resource management efforts. Fort Henry would continue to be protected and interpreted by the U.S. Forest Service as a part of the Land Between the Lakes National Recreation Area. NPS would assist in protection and interpretation at Fort Henry if requested.

2.2 ALTERNATIVE B: EXPAND FORT DONELSON BY ADDING FORT HEIMAN AND TEN ELIGIBLE PROPERTIES AT FORT DONELSON NATIONAL BATTLEFIELD

This alternative would seek to enhance protection of Civil War era resources and enhance the visitor experience offered at Fort Donelson by including the Fort Heiman site and the eligible parcels at Fort Donelson National Battlefield within the authorized boundary. The National Park Service through Fort Donelson would also work cooperatively with the Forest Service at the Land Between the Lakes National Recreation Area to preserve and interpret the historic resources associated with Fort Henry.

2.2.1 Management Authority

The National Park Service would continue to manage Fort Donelson, including the eligible sites, as it has in the past. Fort Henry would continue to be managed by the U.S. Forest Service as a part of the Land Between the Lakes National Recreation Area. The Fort Heiman site would be added to Fort Donelson, and the National Park Service would assume management responsibilities at the site.

2.2.2 Boundary Recommendation

The authorized boundary at Fort Donelson would be enlarged to include the resources of Fort Heiman, as well as the eligible sites within the core area at the national battlefield. The acreage ceiling at Fort Donelson National Battlefield would be adjusted accordingly. The authorized boundary would be increased to 2000 acres to allow for the addition of Fort Heiman and eligible properties at Fort Donelson. The property at Fort Heiman and the eligible sites at Fort Donelson would be acquired on a willing seller basis only. Fort Henry would continue to be managed by the U.S. Forest Service.

2.2.3 Resource Protection and Visitor Use

Protection of the historic resources at the Fort Heiman site would be the responsibility of the National Park Service, as would the additional sites and resources at Fort Donelson.

The visitor experience would be enhanced beyond that provided by alternative A, because some level of interpretation at Fort Heiman would be provided and resources relating to the Federal story at Fort Donelson would be protected and interpreted. The extent of the experience is difficult to predict, but at a minimum, access would be improved, parking enhanced, interpretive waysides installed, and informational pamphlets prepared. This additional layer of interpretation at Fort Heiman would broaden the story of Fort Donelson. A third component of the visitor experience would consist of interpreting the significant resources at Fort Henry in cooperation with the U. S. Forest Service. Thus, the trilogy of the forts' story and their ramifications for the

Civil War would be interpreted more comprehensively. If this alternative were implemented, the NPS would undertake a site development assessment for Fort Heiman to determine what facilities are necessary onsite to provide for resource protection and visitor use.

2.3 BUDGET ESTIMATE

Alternative A, the no-action alternative, would not increase the current budget of FODO.

The costs associated with management, operation, and development of an expanded Fort Donelson resulting from alternative B are estimated as follows. Total first-year costs are anticipated at just over \$1 million, largely from the addition of Fort Heiman and management of the site as a detached unit of Fort Donelson.

First-year personnel needs would include a supervisory ranger, an education specialist, five park guides, as well as two maintenance workers – a supervisor and one support clerk. Personnel costs at that staffing level would cost \$676,000. Additionally a one-time development cost of \$325,000 is anticipated to cover the facility needs, maintenance equipment, etc. Operational costs for future years would be expected to be approximately \$850,000 to \$900,000 annually.

2.4 ENVIRONMENTALLY PREFERRED ALTERNATIVE

As stated in Section 2.7 (D) of the NPS DO-12 Handbook, “The environmentally preferred alternative is the alternative that will best promote the national environmental policy expressed in NEPA (Section 101(b)).”

The approach for incorporating these national goal statements into the determination of the environmentally preferable alternative used a qualitative comparison rating of the alternatives under consideration. Each alternative assessed in this EA was rated as to how well it contributes to meeting each of the six NEPA goals. Given the very general nature of the goal statements, with no specific measurable parameters identified, precise, quantitative ratings are not feasible. Therefore, three general qualitative levels were established to rate alternatives as to how well they contribute to meeting each goal: 1) the alternative contributes substantially to meeting that goal (denoted by a check mark); 2) the alternative neither much contributes toward nor detracts from meeting that goal (denoted by a circle); and 3) the alternative interferes with that goal achievement (denoted by an “X”). Each rating was judgmentally based on an alternative’s predicted impacts on the relevant environmental resources. For example, an alternative that adversely affects historic, cultural, and natural resources would get a low rating for NEPA goal #4. Although more than one alternative may contribute substantially towards meeting a goal, one may contribute to a greater extent than another. In these cases, the use of multiple check marks denotes the difference between alternatives, with the larger number of check marks indicating the greater level of goal achievement.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) SEC 101 GOAL STATEMENTS

- (1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- (3) Attain the widest range of beneficial uses of the environment without degradation, risk to health and safety, or other undesirable and unintended consequences;
- (4) Preserve important historic, cultural, and natural aspects of our national heritage, and maintain wherever possible, an environment which supports diversity and variety of individual choice;
- (5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- (6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(NEPA, 42 U.S.C. 4321-4347)

A summary of this process for each alternative is presented in Table 2-1. Below the table, a discussion is provided for each alternative explaining the basis for each of the ratings given to that alternative. Identification of the environmentally preferred alternative involved comparing the entire set of ratings for each alternative. In the absence of any indication of Congressional intent otherwise, each of the six NEPA goal statements was considered equally important.

Alternative A

Under Alternative A, the No Action Alternative, no change in management or ownership of either Fort Heiman, Fort Henry, or the ten eligible properties in the core area would occur. The boundaries of Fort Donelson National Battlefield would remain unchanged. The NPS would assist in the protection and management of Fort Heiman by offering technical support in the areas of historic preservation and interpretation to the best of its ability, with the aim of helping ensure protection of the resources, if requested. The NPS would also enter into cooperative agreements as necessary to support other public and private entities in their resource management efforts. Fort Henry would continue to be protected and interpreted by the U.S. Forest Service as a part of the Land Between the Lakes National Recreation Area. NPS would assist in protection and interpretation at Fort Henry if requested by the USFS and LBL. The ten battlefield core area properties eligible for addition to FODO would instead remain with their current owners.

Implementation of Alternative A would likely lead to some minor direct and indirect impacts on natural resources at the Fort Heiman site and the eligible properties, particularly soils, water, vegetation, and wildlife, as a result of continuing residential home site development and consequent habitat fragmentation over much of the property. When combined with other residential and recreational development in the surrounding area of Calloway and Stewart

Table 2-1. Selection of the Environmentally-Preferred Alternative		
National Environmental Policy Act Goals	Management Alternative A	Management Alternative B
Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.	X	✓
Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.	○	✓
Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences.	○	✓
Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, whenever possible, an environment which supports diversity, and variety of individual choice.	X	✓✓
Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.	○	○
Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.	○	✓
Legend: Contributes substantially toward meeting the goal = ✓ Neither contributes much nor detracts much from meeting the goal = ○ Interferes with achieving the goal = X		

counties, minor, adverse cumulative impacts to these resources might result. In addition, certain beneficial impacts on natural resources resulting from NPS management, such as resource monitoring, protection, and preventative measures, would be absent at Fort Heiman and the eligible properties under Alternative A. The combined efforts of the NPS and other stakeholders might enhance some resource protection than would otherwise occur in the complete absence of public and government interest in the subdivided, privately-owned property at Fort Heiman. This would also occur with the eligible parcels at FODO. At Fort Henry, management and protection of natural resources by the USFS and LBL would essentially be equivalent to that offered by the NPS.

Alternative A would not protect significant cultural and historic Civil War-era resources and features at Fort Heiman and the ten eligible properties in the battlefield's core area. Federal, state and local laws, policies, programs and regulations are insufficient to ensure their complete

preservation in the absence of federal ownership or other public ownership. Likewise, NPS expertise and cooperation or partnership with stakeholders would not, in and of itself, offer sufficient guarantee of protecting Fort Heiman's and the ten eligible properties' historic resources. At Fort Henry, in contrast, management by the USFS and LBL would furnish adequate protection of that site's historic features and resources.

By not adding Fort Heiman and the ten eligible properties to Fort Donelson National Battlefield, Alternative A would forego the opportunity to expand the visitor experience at both Fort Donelson and Fort Heiman. Visitation by heritage tourists and the public would be restricted or discouraged as private dwellings continued to be developed on the historic fort site, which is the most likely reasonably foreseeable scenario under this alternative. At Fort Henry, the visitor experience might improve somewhat as the NPS and USFS cooperated to publicize and interpret the site and link it more explicitly to Fort Donelson.

Alternative A would also forego certain economic and social benefits that would likely accrue in Calloway County, Kentucky (site of Fort Heiman), because the market for heritage tourism would not be developed and fewer out-of-county and out-of-state tourists would visit the county. It would also miss out on the social benefit that would obtain from stirring pride in county residents at the official recognition of Calloway County's unique contribution to the nation's Civil War history. Furthermore, Alternative A would lead to some loss of aesthetic attributes of the undeveloped Fort Heiman site, as well as the ten battlefield core area properties, as more of them were converted to houses and other structures and trees and open space were eliminated to accomplish this. On the opposite side of the ledger, Alternative A would avoid the adverse effect of an increase in traffic on rural roadways that lead to Fort Heiman and the small roads leading to the ten eligible properties at Fort Donelson; thus, it would also avoid a possible increase in the number of accidents that occur on these country and low-capacity roads, both vehicle-vehicle and vehicle-pedestrian. It would also avoid any need for possible upgrade of these roads in the future. At Fort Henry, these effects, both adverse and beneficial, would either not occur or not occur to any appreciable extent, because its management and condition would not change under continuing USFS and LBL stewardship.

In sum, compared with Alternative B, Alternative A does have fewer potential adverse impacts in regards to transportation (increased traffic) and human health and safety (traffic accidents). However, Alternative A has greater potential adverse effects than Alternative B in the areas of soils, water, vegetation, wildlife, and particularly historic/cultural resources. Furthermore, Alternative A would lead to fewer benefits to the surrounding economy by missing out on the potential for heritage tourism that adding Fort Heiman and the ten eligible battlefield core area properties to FODO could bring.

Alternative B

Under Alternative B, Fort Heiman and the ten eligible battlefield core area properties would be added to Fort Donelson National Battlefield while Fort Henry would remain under USFS management. This alternative would seek to enhance protection of Civil War-era resources, as well as enhance the visitor experience offered at Fort Donelson by including the Fort Heiman site and the ten eligible properties within the authorized boundary. The NPS, through the staff at

FODO, would also work cooperatively with the USFS at the LBL National Recreation Area to preserve and interpret the historic resources associated with Fort Henry.

At Fort Heiman and the ten battlefield core area properties, implementation of Alternative B would likely avoid the minor direct and indirect impacts to soils, water, vegetation, and wildlife associated with the No Action Alternative; adverse impacts from Alternative B on these resources would probably be negligible to minor, as would cumulative impacts to the same. In addition, certain beneficial impacts on natural resources resulting from NPS management, like resource monitoring, protection, and preventative measures, would occur at Fort Heiman and the battlefield core area properties under Alternative B. At Fort Henry, management and protection of natural resources by the USFS and LBL would essentially be equivalent to that offered by the NPS at Fort Heiman and the ten eligible properties, if acquired under this alternative.

Alternative B would offer protection for nationally-significant cultural and historic Civil War-era resources and features at Fort Heiman and the ten eligible properties at Fort Donelson. At Fort Henry, management by the USFS and LBL, with technical and interpretive assistance furnished by NPS upon request, would furnish adequate protection of that site's historic features and resources; however, the degree of preservation over the long term might not be as great as that extended by the NPS at Fort Heiman, because the greater emphasis on historic preservation within the NPS mission.

By adding Fort Heiman to Fort Donelson National Battlefield, Alternative B would take advantage of the opportunity to expand the visitor experience at both Fort Donelson and Fort Heiman. Visitation by heritage tourists and the public at Fort Heiman would increase greatly, and the quality of their experience would improve over that available at present. At Fort Henry, the quality of the visitor experience might improve somewhat over existing conditions as the NPS and USFS cooperated to publicize and interpret the site and link it more explicitly to Fort Donelson.

Alternative B would also generate economic and social benefits that would likely accrue primarily in Calloway County, Kentucky (site of Fort Heiman), attracting heritage tourism and visitors to the county, who would spend money for goods and services there. It would also realize the social benefit and pride the county's residents would gain from the official recognition of Calloway County's own contribution to the nation's Civil War history. Any increase in heritage tourism in Stewart County, Tennessee due to the addition of the ten eligible properties to FODO is likely to be negligible to minor, because FODO already receives substantial visitation. Furthermore, Alternative B would retain the aesthetic attributes of the undeveloped Fort Heiman and battlefield core area sites that would probably be lost under the No Action Alternative, by avoiding the development of houses or other structures on the properties.

On the opposite side of the ledger, Alternative B would generate an increase in traffic on rural and small-capacity roadways that lead to Fort Heiman and the ten properties, though probably not to a degree where level of service is degraded; thus, it would also lead to a possible increase in the number of accidents that occur on these country and small-capacity roads, both vehicle-vehicle and vehicle-pedestrian. Eventually, Alternative B could possibly necessitate an upgrade of these roads. At Fort Henry, these effects, both adverse and beneficial, would either not occur

or not occur to any appreciable extent, because its management and condition would not change under continuing USFS and LBL stewardship.

In sum, compared with Alternative A, Alternative B has greater potential adverse impacts in regards to transportation (increased traffic) and human health and safety (more traffic accidents). However, Alternative B has greater potential beneficial effects in the areas of soils, water, vegetation, wildlife, and particularly historic/cultural resources. Furthermore, Alternative B would lead to greater benefits for the surrounding economy by capitalizing on the potential for heritage tourism that adding Fort Heiman and the ten eligible properties to FODO could bring.

Environmentally Preferred Alternative

As is evident from Table 1, Alternative A, the No Action Alternative, would generally not meet NEPA's goals. In contrast, Alternative B does contribute substantially toward most of the goals. Thus, Alternative B would be the environmentally preferred alternative because it would do a much better job of preserving important historic and cultural aspects of our national heritage. It would also provide for greater enhancement of the visitor experience than Alternative A.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER STUDY

As discussed in Section 1.1 of this BAS & EA, Public Law 106-487, passed November 2000, authorized a feasibility study on the preservation of Civil War battlefields along the Vicksburg Campaign Trail. The purpose of this feasibility study, now in process, is to examine and evaluate a number of sites in Arkansas, Louisiana, Mississippi, and Tennessee associated with the Civil War events of the Vicksburg Campaign. The feasibility study will also recommend how best to preserve the historic value and character of these Civil War resources. Forts Donelson, Heiman, and Henry are three of the more important sites of the hundreds under consideration.

Alternatives to the Proposed Action involve differing degrees of NPS participation in the protection of historic resources at Fort Heiman, Fort Henry, and eligible properties within the battlefield core area – from no partnership, technical support or cooperation at all at one end of the spectrum to fee simple ownership and complete control at the other end. For the NPS to make no effort or take no steps at all to protect significant historic resources remaining at Fort Heiman and the ten eligible battlefield core area properties would be to violate the agency's mission and the public trust. Therefore, this alternative is not considered reasonable and is dismissed from further consideration.

Although various state and local entities are actively interested in protecting and interpreting Fort Heiman, all have limited resources and none envision long-term management of the property. It is the stated intention of such entities to have the site included in the national park system as part of Fort Donelson National Battlefield. No other management entity capable of providing for the necessary levels of resource protection and visitor use at Fort Heiman has emerged. Other

regulatory mechanisms for the protection of the site, such as county zoning, are significantly limited. Therefore, the alternative of state or local government acquiring Fort Heiman or providing for its protection through land use regulation is not considered reasonable and is dropped from further consideration. This determination is based on ample discussions and coordination with officials from Calloway County, Kentucky, Stewart County, Tennessee, West Kentucky Corporation, Kentucky Heritage Council (the State Historic Preservation Office or SHPO in Kentucky), Tennessee Historical Commission (the SHPO in Tennessee), and Fort Heiman Friends Group.

At the other extreme, for the NPS to seek ownership of a much larger area at Fort Heiman than that indicated as possessing historic properties, and/or for the NPS to seek to acquire all of the Land Between the Lakes National Recreation Area as a means of protecting and interpreting historic and natural resources related to Fort Donelson and the Civil War would also not be reasonable on several grounds. It would spread the agency's limited resources too thinly, and is unnecessary for protection of significant resources at both sites. LBL is already managed by the U.S. Forest Service for the protection of natural resources and encouragement of compatible outdoor recreation by the public.

One other related alternative concept was considered but also eliminated from further analysis. The possibility of expanding Fort Donelson by adding Fort Henry itself (rather than the entire LBL National Recreation Area) was not considered further, since Fort Henry is already adequately protected by the USFS.

Therefore, the two alternatives investigated in the body of this BAS & EA represent a reasonable range of alternatives for the Proposed Action.

2.6 MITIGATION MEASURES

As discussed in Section 1.4, Scope of the BAS & EA, the analysis of potential impacts resulting from the different management alternatives (Section 4.0 of this document) is supplemented by a general description of potential impacts that should be considered in subsequent NEPA documentation (like a Supplemental EA) regarding potential site-specific NPS developments to enhance visitor experience at either Fort Heiman or the ten eligible battlefield core area properties. Since these developments are neither part of the scope of this BAS & EA nor the decision to be made regarding the boundaries of Fort Donelson National Battlefield, measures that would minimize or avoid adverse impacts to environmental and socioeconomic resources as a result of these potential developments are not presented in this section. Mitigation measures associated with these developments will be provided and analyzed, as necessary, in separate future NEPA documentation (e.g. Supplemental EA), once a management alternative is selected and precise plans for development are more fully elaborated.

Table 2-2 provides a list of measures, according to the resource area affected, that would minimize or avoid adverse impacts on environmental and socioeconomic resources as a result of implementation of Alternatives A or B. In addition, a reference to the section of this BAS & EA that contains a detailed discussion of the consequences on that resource area is provided.

Table 2-2. Recommended Mitigation Measures By Resource Area

Resource Area	Applicable Alternative(s)	Mitigation Measure
Natural Resources: Soils, Water Resources, and Vegetation and Wildlife	B	<ul style="list-style-type: none"> • If trails are constructed at Fort Heiman or the ten eligible battlefield core area properties, ensure proper installation of drainage controls along the trail to control increased surface water runoff from the trail and to reduce subsequent erosion and sedimentation. • Use signage and, where necessary physical barriers, to minimize the potential for users to veer off the trail and damage trailside vegetation and to minimize adverse impacts on vegetation due to maintenance needs. • Avoid placing parking lots or trails in wetland areas. • Use signage and/or brochures to remind visitors that as part of the national park system, wildlife is not to be disturbed. • Coordinate and consult with the USFWS and KY and/or TN authorities over T & E species, so as to avoid impacts and conflicts; directed surveys may be indicated, depending on the species in question; it may be possible to take particular steps not only to avoid or minimize adverse impacts to T & E species, but even to enhance their populations and habitat.
Cultural Resources	A	<ul style="list-style-type: none"> • Work with the current landowners to encourage development away from earthworks and other resources so as to minimize disturbance or destruction of the same; cooperate with partners and stakeholders to establish and enforce measures to prevent and reduce human impacts, such as vandalism and looting, on cultural resources.
Cultural Resources	B	<ul style="list-style-type: none"> • When inviting visitors onto the sites and designing and locating trails, avoid encouraging them to trample earthworks. • Consider the selective removal of larger trees from earthworks in order to avoid damage to the same from accidental blowdown of decadent, weakened trees in storms, when large amounts of earth can be ripped out and a gaping hole left where the root ball was.
Transportation and Human Health and Safety	B	<ul style="list-style-type: none"> • Work with local highway district, Kentucky Transportation Cabinet and Tennessee Department of Transportation to protect public safety on roads leading to Fort Heiman and battlefield core area properties. Measures may include additional signage; reduced speed limits, particularly around curves; improving line-of-sight around curves; road widening; center striping; • Assess and identify potential conflicts between increased visitation (and associated traffic) and adjacent residences, sidewalk availability, school bus routes, and bus stops in order to avoid any adverse health or safety impacts on residents, pedestrians and children. • To protect the safety of workers, the NPS has a set of construction contract safety standards and requirements, which

Transportation and Human Health and Safety	B	<p>contractors for NPS projects must follow during construction. These standards are contained within NPS Guide Specifications, Section 01360-4, <i>Accident Prevention</i> (NPS, 2000d). As part of these specifications, all workers or visitors to the construction site are required to wear hard hats, in addition to any other necessary protective equipment, at all times. At every construction site, adequate first aid facilities must be provided and emergency phone numbers posted, with reporting requirements. The NPS construction contract specifications also require that an accident prevention program, which includes, among other things, first aid procedures and training, hazardous materials handling and storage training, fire protection, and hazard identification, be established before work begins to ensure worker and visitor safety (NPS, 2000d).</p> <ul style="list-style-type: none"> • Public safety impacts can be minimized by erecting barricades around construction site(s) and locking the site(s) at night and during work holidays. • At construction sites, waste would be contained in appropriate containers on the project site, and, in accordance with NPS requirements, these containers would be emptied at least once a week (NPS, 2000c). Waste would be transported for disposal at the nearest approved disposal facility. Consideration would need to be given to the capacity of these disposal sites, based on the amount of wastes anticipated to be generated by construction. • All employees that would be exposed to hazardous materials must be trained and instructed in approved methods for handling and storage of such materials (NPS, 2000d). In addition, the potential for an accidental chemical spill during construction could be further reduced by the development and implementation of an SPCC Plan, which would also minimize adverse impacts associated with a spill. The NPS has guidelines for the preparation of SPCC Plans, contained in <i>Envirofacts, Spill Prevention Planning</i> (NPS, 1999b).
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2.7 COMPARISON OF ALTERNATIVES

This BAS & EA analyzes the potential impacts resulting from different management alternatives for protecting Fort Heiman and the ten eligible battlefield core area properties. Table 2-3 compares the potential environmental impacts resulting from management Alternatives A (No Action) and B. Potential impacts are grouped according to environmental resource area or component. Section 4.0, Environmental Consequences, of this BAS & EA contains a detailed discussion of these potential impacts by resource topic.

As discussed in Section 1.4, Scope of the BAS & EA, the analysis of potential impacts resulting from the different management alternatives (Section 4.0 of this BAS & EA) is supplemented by a general description of potential impacts that should be considered in subsequent NEPA

documentation regarding potential NPS developments to enhance visitor experience. Since these developments are neither part of the scope of this BAS & EA nor the decision to be made regarding the boundaries of Fort Donelson National Battlefield, the potential impacts resulting from possible developments do not affect the impact ratings or comparison of alternatives presented below. Potential impacts from development scenarios will be analyzed in detail and compared in separate NEPA documentation (like a Supplemental EA), once a management alternative is selected and plans for development are more fully refined.

Table 2-3. Comparison of Potential Impacts of the Alternatives		
Environmental Resource Area	Alternative A (No Action)	Alternative B (Expand Fort Donelson by Adding Fort Heiman and Ten Eligible Properties at Fort Donelson National Battlefield)
Natural Resources	<ul style="list-style-type: none"> Minor direct or indirect adverse impacts on soils, topography, water resources, air, vegetation and wildlife are anticipated Long-term, localized, negligible to minor, adverse cumulative impacts on natural resources from continued development at Fort Heiman and at the ten eligible battlefield core area properties Negligible impacts on natural resources at Fort Henry 	<ul style="list-style-type: none"> Long-term, localized, minor to moderate, beneficial impacts on soils at Fort Heiman and the battlefield core area properties due to NPS management activities to control for erosion Long-term, localized, negligible to minor, adverse impact on soils from increased visitation and removal of trees for cultural resource protection at Fort Heiman and the ten battlefield core area properties Long-term, localized, negligible to minor, adverse impact on water resources from increased visitation on the sites and removal of trees at Fort Heiman and the ten battlefield core area properties for cultural resource protection Long-term, localized, moderate, beneficial impact on water resources and water quality at and near Fort Heiman and the ten battlefield core area properties due to NPS management activities to improve and monitor water quality Long-term, localized, minor, beneficial impact on possible wetlands at Fort Heiman due to increased protection and preservation under NPS management Long-term, regional, negligible to minor, adverse air quality impacts from increased vehicular traffic throughout the area Long-term, localized, negligible to minor, adverse impact on vegetation and wildlife at Fort Heiman and the ten battlefield core area properties due to removal of any vegetation, and any resulting loss of habitat, and disturbance related to increased visitation Long-term, localized or regional, moderate, beneficial impact on vegetation and wildlife at Fort Heiman, and the ten battlefield core area properties, including threatened and endangered species, due to increased protection and monitoring under NPS management
Cultural Resources	<ul style="list-style-type: none"> Potential long-term, localized, moderate to major, adverse impact on historic and cultural resources due to inadequate restrictions on private land development at Fort Heiman and the ten battlefield core area properties 	<ul style="list-style-type: none"> Long-term, moderate, beneficial impacts on historic resources at Fort Heiman, the ten eligible battlefield core area properties, and Fort Donelson National Battlefield, due to active NPS protection and preservation measures Long-term, minor to moderate, beneficial impacts on cultural resources from enhanced public knowledge, understanding, and appreciation of the significance of the historic resources at Fort Heiman and the ten eligible battlefield core area properties

Table 2-3. Comparison of Potential Impacts of the Alternatives		
Environmental Resource Area	Alternative A (No Action)	Alternative B (Expand Fort Donelson by Adding Fort Heiman and Ten Eligible Properties at Fort Donelson National Battlefield)
	<ul style="list-style-type: none"> Fort Henry historic resources adequately protected 	<ul style="list-style-type: none"> Potential long-term, minor, adverse impact on cultural and historic resources from possible developments or incompatible uses on adjacent lands at Fort Heiman and the ten battlefield core area properties Fort Henry historic resources adequately protected
Visitor Use and Experience	<ul style="list-style-type: none"> At Fort Heiman and the ten battlefield core area properties, negligible levels of visitor use likely to persist or even decline as subdivided properties are gradually developed At Fort Henry, no impacts on current relatively low levels of visitor use or patterns, or visitor experience in the area are anticipated No impact on recreational opportunities Negligible to minor adverse impact on visitor use and experience at Fort Donelson National Battlefield 	<ul style="list-style-type: none"> Long-term, regional, moderate, beneficial increase in visitor understanding, historical appreciation, interpretation, and educational experiences at Fort Heiman, the ten battlefield core area properties and FODO Long-term, localized, negligible to minor, adverse congestion at Fort Heiman and the ten battlefield core area properties due to increased visitation Long-term, localized, minor to moderate, beneficial impact at Fort Heiman and the ten battlefield core area properties from NPS management due to maintenance of the integrity of historic resources and improvement of their long-term viability At Fort Henry, little impact on current relatively low levels of visitor use or patterns, or visitor experience in the area is anticipated; perhaps minor increase in visitation Long-term, localized and regional, minor to moderate, beneficial increase in the amount and diversity of available regional recreational opportunities
Socioeconomic Environment	<ul style="list-style-type: none"> No adverse or beneficial direct or indirect impacts on the population, economy, or utilities and public services, in the area Short-term to potentially long-term, moderate, regional, adverse social impact, due to the Calloway County public being in support of NPS protecting Fort Heiman and adding it to Fort Donelson National Battlefield Long-term, negligible to minor increase in demand for utilities and public services in Calloway County due to more development at Ft Heiman 	<ul style="list-style-type: none"> No change in the region's population Long-term, regional, negligible to minor, beneficial increase in employment Long-term, regional, minor to moderate, beneficial increase in visitor spending Long-term, regional, moderate, beneficial social impacts due to high levels of community support for NPS protection of Fort Heiman and its addition to Fort Donelson National Battlefield Potential long-term, localized, minor to moderate adverse social impacts from nuisances associated with adding Fort Heiman, such as congestion or trespassing Long-term, regional, negligible to minor, beneficial impacts on the economy and visitor spending due to the plottage effect No potential to damage or disrupt utilities in the area and no additional

Table 2-3. Comparison of Potential Impacts of the Alternatives		
Environmental Resource Area	Alternative A (No Action)	Alternative B (Expand Fort Donelson by Adding Fort Heiman and Ten Eligible Properties at Fort Donelson National Battlefield)
		utility connections necessary <ul style="list-style-type: none"> Long-term, regional, negligible to minor increase in demand for utilities and public services due to increased visitation
Transportation	<ul style="list-style-type: none"> Neither adverse nor beneficial impacts on transportation Negligible increase in traffic on roads accessing Fort Heiman site and the ten battlefield core area properties No to negligible increase in traffic on roads accessing Fort Henry 	<ul style="list-style-type: none"> Long-term, localized and regional, negligible to minor, adverse increases in traffic congestion and delays, local road damage, and the incidence of vehicular-related accidents on roads leading to Fort Heiman and the ten battlefield core area properties Long-term, localized, and negligible to minor, adverse increases in noise levels and degradation of visual quality due to increases in visitation and visitor traffic along roads leading to Fort Heiman and the ten battlefield core area properties No to negligible impacts to transportation around Fort Henry
Land Use	<ul style="list-style-type: none"> Development of subdivided lots at Fort Heiman likely to continue gradually, with associated increments to county population, housing stock, and property taxes Encroachment of development onto ten eligible battlefield core area properties likely to continue Neither adverse nor beneficial impacts at Fort Henry 	<ul style="list-style-type: none"> Long-term, negligible, beneficial changes in land use at the Fort Heiman site and the ten battlefield core area properties Short-term, localized, minor to moderate, adverse impact on adjacent land values at Fort Heiman and the ten battlefield core area properties Potential long-term, localized, moderate, beneficial impact on adjacent land values if rezoning were to occur at Fort Heiman and the ten battlefield core area properties Potential long-term, localized, adverse impact on park resources at Fort Heiman and the ten battlefield core area properties in the event of developments on adjacent lands
Visual Resources	<ul style="list-style-type: none"> Long-term, minor adverse change to visual resources of the Ft. Heiman site and the ten battlefield core area properties from ongoing and future construction and development 	<ul style="list-style-type: none"> Long-term, minor, beneficial impacts on the visual quality of the Fort Heiman site and the ten battlefield core area properties due to NPS management/site improvements Long-term, localized, negligible to minor adverse impact on visual quality from increased visitors/traffic at Ft Heiman and the eligible core area properties No change to visual resources at Fort Henry site
Human Health and Safety	<ul style="list-style-type: none"> No impacts on human health and safety 	<ul style="list-style-type: none"> Minor impacts during any construction Long-term, localized, moderate, beneficial impacts on human health and safety from enhanced safety programs on NPS lands

3.0 AFFECTED ENVIRONMENT

In accordance with CEQ regulations (40 CFR 1502.15), this section describes the existing conditions of the area(s) to be affected by the alternatives under consideration in this BAS & EA. As stated in DO-12, the NPS NEPA compliance guidance handbook, only those resources that may experience impact or be affected by alternatives under consideration should be described in this section. Only the resources of Forts Heiman and the ten eligible battlefield core area properties are described, since only these resources, and not those of Fort Donelson National Battlefield per se, are likely to be affected by the proposed action. While it is possible that visitation to Fort Donelson itself could be boosted by the proposed boundary expansion, this increase in visitation would probably be marginal at most, and environmental effects thereof all but negligible.

As discussed in Section 1.4 of this BAS & EA, the analysis of potential environmental and socioeconomic impacts that may result from the different management alternatives is supplemented in this BAS & EA by a general description of potential impacts that should be considered in subsequent NEPA documentation regarding potential future NPS developments to enhance visitor experience. Therefore, for the purposes of this EA, the affected environment has been expanded to include all resources that may be affected by future NPS developments, not just those resources that would be affected by the different management scenarios analyzed in detail in this EA. Because site-specific future development scenarios have not yet been determined, the discussion of the affected environment for those resource areas that would only be affected by potential future NPS developments is very broad in nature. For the most part, a regional resource description is presented, rather than site-specific conditions.

3.1 NATURAL RESOURCES

3.1.1 Soils and Topography

Soil Association: A landscape, named for its major soil types, that has a distinctive proportional pattern of soils, generally consisting of one or more major soils and at least one minor soil type.

Soil Series: A group of soils with profiles that are nearly alike, except for differences in texture of the surface layer. All soils of a series have horizons that are similar in composition, thickness, and arrangement.

Soil Complex: An area or mapping unit with two or more soils so intermingled or so small in size that they cannot be distinguished on the soil map.

Several different kinds of parent material of the soils within Calloway County, Kentucky have been identified, including loess, a windblown silty material which covers nearly all upland areas, alluvium, which is sediments deposited by moving water, cherty limestone residuum, and gravelly and loamy Coastal Plain materials (SCS, 1973).

One soil association and one soil complex underlie Fort Heiman and the Federal Fort and its adjacent lands: the Brandon-Bodine Association and the

Parent Material: The unconsolidated mass in which soil forms. The characteristics of the parent material determine soil characteristics, such as thickness and texture of the horizons, mineralogy, color, and reaction.

Saffell-Guin Complex. Soils of the Brandon-Bodine Association are sloping to very steep, well-drained to excessively drained, silty and include silty and cherty soils on uplands (SCS, 1973). The primary soil series of this association are described in Table 3-1. Soils of the Saffell-Guin Complex include the Saffell and Guine Series, which occur on sloping to very steep sites and consist of well-drained, gravelly soils developed Coastal Plain sediments.

Table 3-1. Properties and Suitability of Soil Series Underlying the Fort Heiman site		
Soil Association or Complex	Soil Series	Properties and Suitability
Brandon-Bodine Association	Bodine cherty silt loam, 12 to 20 % slopes	<ul style="list-style-type: none"> • Located on the upper part of side slopes • Permeability rapid and available moisture capacity low • Organic matter content low and natural fertility very low • Very strongly acid • Contains cherty material unfavorable to plant growth • Suitable for use as pasture, woodland and wildlife habitat
	Bodine cherty silt loam, 20 to 60 % slopes	<ul style="list-style-type: none"> • Located on side slopes near Kentucky Lake • Permeability rapid and available moisture capacity low • Organic matter content low and natural fertility very low • Very strongly acid • Contains cherty material unfavorable to plant growth • Not suited to cultivated crops and poorly suited to pasture; unless cover maintained, erosion hazard is very severe • Suitable uses are woodland and wildlife habitat
	Brandon silt loam, 6 to 12% slopes	<ul style="list-style-type: none"> • Found on narrow ridgetops • Developed in loess parent material over gravelly Coastal Plain deposits • Moderately permeable and available moisture capacity is moderate • Strongly to very strongly acid • Moderately deep rooting zone above very gravelly material unfavorable to root growth • Organic matter content is low and natural fertility is moderate • Suitable for most cultivated crops but has severe erosion hazard
	Brandon silt loam, 12 to 20% slopes	<ul style="list-style-type: none"> • Found on side slopes on deeply dissected sites • Developed in loess parent material over gravelly Coastal Plain deposits • Moderately permeable and available moisture capacity is moderate • Strongly to very strongly acid • Moderately deep root zone above very gravelly material unfavorable for root penetration • Organic matter content and natural fertility are low • Not suitable for cultivated crops because of erosion potential; better suited to pasture, wood, or wildlife habitat

	Brandon silt loam, 20 to 30% slopes	<ul style="list-style-type: none"> • Found on side slopes on sites deeply dissected by natural drainages • Developed in loess parent material over gravelly Coastal Plain deposits • Moderately permeable and available moisture capacity is moderate • Strongly to very strongly acid • Moderately deep root zone above very gravelly material unfavorable for root penetration • Organic matter content and natural fertility are low • Use severely limited by steep slope and erosion hazard; best suited for pasture, woodland, and wildlife habitat; supports grasses and legumes
Saffell-Guin Complex	Saffell-Guin Complex, 6 to 12% slopes	<ul style="list-style-type: none"> • Located on narrow ridgetops in areas deeply dissected by natural drainages • Consists of about 70% Saffell soil and 30% Guin soil • Permeability is moderate to rapid and available moisture capacity is low • Organic matter content and natural fertility are low • Shallow or moderately deep to very gravelly material that is unfavorable for root penetration • Strongly acid to very strongly acid • Droughty and poorly suited to cultivated crops due to poor workability and erosion hazard • Difficult to establish good pasture and meadow plants • Most suited to woodland and wildlife habitat

Source: SCS, 1973

In general, as Table 3-1 makes clear, the soils of the Fort Heiman and Federal Fort complex are best suited to woodland and wildlife habitat. They are not good agricultural soils, due to their rockiness, steepness, erosion hazard (when cleared), low available moisture capacity, low organic content, acidity, and low fertility.

The topography of the Fort Heiman and Federal Fort complex is overall rather hilly, with slopes ranging from zero percent along the ridgetops to approximately 60% where they drop down to the shore of Kentucky Lake. Most of the remaining earthworks themselves are on moderately sloped sites.

Stewart County, Tennessee and Fort Donelson lies within the Western Highland Rim Subsection, of the Highland Rim Section. This subsection consists of a maturely dissected plateau with narrow ridges, steep slopes, and stream valleys. Elevations above sea level range from 360 feet along the Cumberland River to 550 on ridge crests. Topographic conditions vary from nearly flat bottomlands and terraces to upland slopes of 50 percent and perpendicular bluffs along the river.

The Stewart County, Tennessee soil survey identified eight soil associations in the county (SCS, 1953). All of the ten eligible battlefield core area properties are located in the Bodine-Baxter-Nixa-Ennis Association, which comprises about 80 percent of the county. Most of the core area properties occur on sloping upland sites. On these upland sites, soils are chiefly members of the Bodine or Baxter series, which are very poorly suited to crops due to their steepness, chertiness, and low fertility. In general, the soils of the Bodine-Baxter-Nixa-Ennis Association are fourth and fifth-class, meaning they are poorly suited for crop cultivation due to low fertility and other limiting factors like high acidity and poor moisture capacity. Even when used for pasture, the

fifth-class soils generally display low productivity. Both fourth and fifth-class soils are difficult to work and conserve; they are generally best suited to forest rather than any kind of agriculture.

In general, the soils of the ten eligible core area sites at Fort Donelson, like those of the Fort Heiman and Federal Fort complex, are somewhat degraded and are best suited to woodland and wildlife habitat. They are not good agricultural soils, due to their rockiness, steepness, erosion hazard (when cleared), low available moisture capacity, low organic content and low fertility.

3.1.2 Water Resources

Average annual precipitation in Calloway County, Kentucky is about 48 inches, almost all of which falls as rain, not snow. This precipitation is fairly well distributed throughout the year, i.e. there is no distinct wet or dry season. Major droughts are infrequent, but dry periods during the growing season are not unusual. Thunderstorms occur on average about 52 days per year and are most frequent from March through August, but may occur in any month (SCS, 1973).

Except for one or more possible small patches of wooded wetlands, the entire Fort Heiman site is upland, ridgetop, or slope. Where it does border Kentucky Lake, the shoreline is rocky and sharp. As mentioned above, the main area consists of bluffs dropping down at a rather sharp angle into the lake. This very feature is one reason why the site was chosen as a fort site in the first place. There are no permanent water bodies, including small ponds, on Fort Heiman, and no perennial streams.

As would be expected due to its proximity to Calloway County and its generally similar nature, average annual precipitation in Stewart County is almost identical to that of Calloway County – 49 inches compared to 48. In spring, summer, and early fall, this precipitation takes the form of hard rains or heavy downpours, usually associated with thunderstorms. Steady rains prevail during the rest of the year. Heavy rains exceeding 2.5 inches in 24 hours occur occasionally (SCS, 1953).

Of the ten properties within the battlefield core area eligible for addition to FODO, only two of them, the Cherry and Bagard properties, have more than minimal water resources. The Cherry property has an intermittent stream (Lick Creek) that crosses its southeastern corner. A portion of the eastern edge of the Bagard property borders an inlet or finger of Lake Barkley (the impoundment along the Cumberland River). This inlet is actually the flooded mouth of Lick Creek. None of the other eight properties possess standing or flowing surface water.

3.1.3 Air Quality

Under the Federal Clean Air Act (CAA), as amended in 1977 and 1990 (40 CFR 50), the U.S. Environmental Protection Agency (EPA) has established air quality standards in regard to the types of air pollutants emitted by internal combustion engines, such as those in aircraft, vehicles, and other sources. These National Ambient Air Quality Standards (NAAQS) are established for six contaminants, referred to as criteria pollutants, and apply to the ambient air (the air that the general public is exposed to every day) (EPA, 2002). These criteria pollutants include carbon

monoxide, ozone, particulate matter, nitrogen oxides, sulfur dioxide, and lead, and are described below:

1. **Carbon Monoxide (CO).** CO is a colorless, odorless, toxic gas produced by the incomplete combustion of organic materials used as fuels. CO is emitted as a by-product of essentially all combustion.
2. **Ozone (O₃).** O₃ is a photochemical oxidant and a major constituent of smog. Ozone is formed when two precursor pollutants, hydrocarbons and nitrogen oxides, react chemically in the presence of sunlight.
3. **Particulate Matter (PM₁₀).** PM₁₀ are fine particles less than 10 micrometers in diameter. PM₁₀ includes solid and liquid material suspended in the atmosphere and formed as a result of incomplete combustion.
4. **Sulfur Dioxide (SO₂).** SO₂ is a corrosive and poisonous gas produced mainly from the burning of sulfur-containing fuel.
5. **Nitrogen Oxides (NO_x).** NO_x are poisonous and highly-reactive gases produced when fuel is burned at high temperatures, causing some of the abundant nitrogen in the air to burn as well.
6. **Lead (Pb).** Pb is a toxic heavy metal, the most significant emissions of which derive from gasoline additives, iron and steel production, and alkyl lead manufacturing (EPA, 2002).

NAAQS for Criteria Pollutants

Under the CAA, the EPA has established limits on the average levels of pollutants in the air to which the general public is exposed (ambient air). **Primary Standards** establish the level of air quality necessary to protect public health from any known or anticipated adverse effects of a pollutant, allowing a margin of safety to protect sensitive members of the population. **Secondary Standards** establish the level of air quality necessary to protect public welfare by preventing injury to agricultural crops and livestock, deterioration of materials and property, and adverse impacts on the environment, including prevention of reduced visibility.

Pollutant	Averaging Time	Standard ^a (µg/m ³)
Ozone	1-hour	235
Carbon Monoxide (CO)	1-hour	40,000
	8-hour	10,000
Nitrogen Oxides (NO _x)	Annual	100
Sulfur Dioxide (SO ₂)	Annual ^b	80
	24-hour ^b	365
	3-hour ^c	1,300
Particulate Matter (PM ₁₀)	Annual	50
	24-hour	150
Lead (Pb)	0.25 year	1.5
^a Both the Primary and Secondary Standards are the same value, except for sulfur dioxide.		
^b Primary Standard		
^c Secondary Standard		

In addition to these six criteria pollutants, Volatile Organic Compounds (VOCs) are a source of concern and are regulated as a precursor to ozone. VOCs are created when fuels or organic waste materials are burned. Most hydrocarbons are presumed to be VOCs in the regulatory context, unless otherwise specified by the U.S. EPA.

The NAAQS include primary and secondary standards (see text box). Areas where the ambient air quality does not meet the NAAQS are said to be non-attainment areas. Areas where the ambient air currently meets the national standards are said to be in attainment. Calloway County, Kentucky and Stewart County, Tennessee are both in attainment for all six criteria pollutants (EPA, 2002a; EPA, 1995).

Existing information on air quality was reviewed to identify air quality issues, with particular attention paid to background ambient air quality compared to the primary NAAQS. Relevant regulatory requirements under the conformity provision of Section 176(c) of the CAA, as amended in 1990, provide that Federal agencies are prohibited from engaging in, supporting in any way, providing financial assistance for, licensing, permitting, or approving, any activity which does not conform to an applicable State implementation plan under the CAA. Federal actions must be “in conformity” with whatever restrictions or limitations the State has established for air emissions necessary to attain compliance with NAAQS.

For the State of Kentucky, the Division of Air Quality of the Department of Environmental Protection of the Natural Resources and Environmental Protection Cabinet is responsible for ensuring that air quality within the State protects public health and welfare. State law (KRS 224.033) requires the Cabinet for Natural Resources and Environmental Protection to specify regulations for the prevention, abatement, and control of air pollution. The Kentucky State Implementation Plan (SIP) (at 401 KAR 50:005) establishes the general provisions related to new sources with respect to the prevention of significant deterioration of air quality and construction of stationary sources impacting on Kentucky’s non-attainment areas (EPA, 2002b).

For the State of Tennessee, the Tennessee Department of Environment and Conservation (TDEC), Division of Air Pollution Control was established to accomplish control and abatement of air pollution in the State and to maintain the purity of the air resources within the State to protect normal health, general welfare, and physical property of the people, while preserving maximum employment and enhancing the industrial development of the State. Air emission

Final Air Quality Standards

The U.S. EPA issued final air quality standards for particulate matter and ozone on July 16, 1997. Because the regulations are now under review in an appeal before the Supreme Court, the new particulate matter and ozone standards are not being implemented at this time.

standards are established by the Division of Air Pollution Control and procedural requirements for monitoring industries in Tennessee are conducted via the issuance of construction and operating permits to achieve compliance with the Tennessee Air Quality Act (Tennessee Code Annotated Section 53-3408 et seq.) and its implementing regulations (TDEC, no date-a).

Federal activities that are transit-related must meet U.S. EPA’s Transportation Conformity Rule; all other Federal activities are subject to U.S. EPA’s General Conformity Rule (40 CFR 51). The action being proposed by the NPS would come under the General Conformity Rule. For Federal actions subject to the General Conformity Rule, a conformity determination must be made for each pollutant where the total of direct and indirect emissions in a nonattainment or maintenance area caused by a Federal action would equal or exceed the thresholds established under the rule.

These thresholds are referred to as *de minimis* criteria, and vary depending upon the pollutant. For these purposes, the term *de minimis* refers to, among other things, emissions that are “so small as to be negligible or insignificant.” If an action is below the *de minimis* emission threshold, then a conformity determination is not required under the General Conformity Rule. The thresholds established under the General Conformity Rule are 100 tons per year or less for each in order to qualify for *de minimis*. If the *de minimis* criteria are exceeded, then a conformity

determination must be made pursuant to the requirements of the General Conformity Rule. Even though Calloway and Stewart counties are in attainment for all criteria pollutants, this project must establish its compliance with *de minimis* criteria because of the General Conformity Rule.

3.1.4 Vegetation

During pre-settlement times, both the Fort Heiman site and the ten eligible battlefield core area properties were virtually entirely wooded, and the Fort Heiman site still is (Figure 3-1). The sites are located in what ecologists and botanists term the Eastern Broadleaf Forest (Continental) Province (Bailey, 1995). The first Euro-American settlers, arriving about 200 years ago, encountered dense stands of upland hardwoods on slopes, but few if any trees on level areas, as a result of burning by American Indians to maintain conditions favored by bison, which they hunted (SCS, 1973). The new settlers cleared the original forests on a large scale to make way for farming after the arrival of the European-American settlers in the nineteenth century. Calloway County was largely a farming area for about a century, until after World War II and the advent of a diversified economy that included recreation and education (Murray State University). Now, only patches of often marginal, second-growth forest remain, mixed with cropland, pasture, grazing land, and developed areas.

What is “Climax Vegetation?”

Climax vegetation is the structure and species composition that a particular floral community in a given ecosystem or biome (large-scale plant communities) will tend toward via the successional process in the absence of disturbances such as fire, major disease or insect infestations, clearing, or logging. Depending on the type of community (e.g., forest vs. grassland), it can take anywhere from decades to centuries for the climax community to be reached. Climax communities are regarded as self-perpetuating (able to persist indefinitely unless disturbed). A farm field abandoned in southwestern Kentucky or northwestern Tennessee will eventually become a tall forest, but this will take more than 100 years.



Figure 3-1. Dense upland hardwood forest at Fort Heiman

Like its counterpart to the east (Eastern Broadleaf Forest (Oceanic) Province), this ecological province is dominated by broadleaf deciduous forest, but generally smaller amounts of precipitation found here favor the drought-resistant oak-hickory association. Although other forests have oak and hickory, only this particular forest association has both species in abundance. The climax oak-hickory forest is medium-tall to tall.

Widespread dominant tree species in this forest include white oak, red oak, black oak, bitternut hickory, and shagbark hickory. The understory is frequently well developed, often with flowering dogwood. Typical understory species include sassafras and hophorn-beam. The shrub layer is distinct, with some evergreens, and many species of wildflower species occur. On wetter sites within this province, American elm, tuliptree (yellow poplar), and sweet gum can be abundant.

Other trees found at poorer upland soils on both sites include post, willow and blackjack oaks, black tupelo (black gum), and sourwood. Beech, maple, and walnut join white oak on more favorable sites, while hackberry and sycamore can occur on bottomlands (SCS, 1953).

The present vegetative cover at the ten eligible battlefield core area properties is as follows:

1. Smith property: cleared, contains a house on a lot
2. Truitt property: wooded, with a recent timber harvest
3. Norfleet property: wooded with houses
4. Herndon property: wooded with houses
5. Lee property: cleared city lot
6. Wallace property: mostly wooded
7. Bell property: approximately half cleared with the remainder in woods
8. Carson property: mostly wooded
9. Cherry property: mostly wooded with a few overgrown meadows
10. Bagard property: approximately half cleared with the remainder in woods

3.1.5 Wildlife

Mammals likely to occur at both Fort Heiman and the ten eligible battlefield core area properties include a number of species widespread throughout eastern and southern North America, such as the opossum, raccoon, striped skunk, red and gray foxes, coyote, bobcat, white-tailed deer, southern flying squirrel, cottontail rabbit, several species of bats, moles and shrews.

Land Between the Lakes National Recreation Area, on which Fort Henry is located, supports over 230 species of birds. LBL has wild turkeys, ruffed grouse, and quail. Amphibian species found at LBL include 16 salamanders, three toads, and nine frogs. LBL also has 12 species of turtle, five lizards, and 24 snakes. The portions of Calloway County bordering Kentucky Lake, directly across from Stewart County and LBL, likely have fairly similar species lists.

In general, Fort Heiman would be expected to support a greater abundance and diversity of wildlife than the ten eligible battlefield core area properties, due to the greater prevalence of semi-natural, wooded habitats in and around Fort Heiman. The ten eligible properties at FODO are located in and around the town of Dover, which has been growing and developing rapidly in recent years. Species in this area would include those that are better adapted to human presence, structures, activities, noise, roads, traffic, and more heavily modified habitats. A mix of native and non-native species of four or the five vertebrate classes – birds, mammals, amphibians, and reptiles – would be expected to occur on the ten properties. The fifth class of vertebrates, fish, may not be present at all, due to the paucity or absence of surface waters on the properties.

3.1.6 Threatened and Endangered Species

3.1.6.1 Calloway County Listed Species

The most recent and comprehensive data regarding the potential presence of federally- and state-listed plant and animal species within Calloway County, Kentucky are presented below. Also provided below is a description of Kentucky's ranking criteria for plant and animal species.

Four federally-listed species have been documented in Calloway County, including three animals and one plant (USFWS, no date-a). Three species are threatened and one is endangered:

- Gray bat - *Myotis grisescens* (E)
- Bald eagle - *Haliaeetus leucocephalus* (T)
- Piping plover - *Charadrius melodus* (T)
- Price's potato bean - *Apios priceana* (T)

The bald eagle and the piping plover are both associated with large, open bodies of water, and would not be found near Fort Heiman's historic resources, which are located away from the water's edge within the forest. Price's potato bean and especially the gray bat could conceivably occur in the vicinity of the surviving Fort Heiman earthworks.

The **gray bat** is a small bat that roosts in caves generally within one mile of a water body. In the summer, gray bats use warm caves, in which they establish maternal and bachelor colonies. In the winter, they relocate and hibernate in several small cold caves. Gray bats eat aquatic and terrestrial insects and often hunt and feed over water (Johnson and Wehrle, 2002; USFWS, 1997).

Gray bats can be adversely affected by logging if their roost sites are disturbed or if wooded corridors that furnish them cover on nightly flights between roosting and feeding sites are removed. As insect eaters, they are also susceptible to pesticides. A recovery plan for the gray bat was approved in 1982, and the species is noted to be increasing throughout its range (NPWRC, no date). Gray bat populations have risen because of better protection measures, including gates, fences, and signs around caves; better cave gate designs to restrict human disturbance; and improved public education programs. The USFWS has issued no-jeopardy biological opinions on probable impacts of some pesticides on the gray bat; these identify buffer zones and/or time restrictions on pesticide application as reasonable and prudent measures to minimize incidental take (NPWRC, No date).

Found in Alabama, Kentucky, Mississippi and Tennessee, **Price's potato bean** is a vine-like perennial of the pea family (LBL, 2002a). It possesses deep green foliage and small white flowers and is found along shoreline areas and on the edge of forests. Cattle grazing, trampling, and clear-cutting have all contributed to the habitat loss and degradation that have severely diminished the potato bean's numbers around the country.

Calloway County is also home to more than 60 threatened, endangered and species of concern listed by the Kentucky State Nature Preserves Commission (KSNPC, 2000). Table 3-2 lists species monitored in the county by the state, including the federal listed species above:

Table 3-2. State-Monitored Species of Calloway County, Kentucky

Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
PLANT	<i>AESCULUS PAVIA</i>	RED BUCKEYE	T	G5/S2S3
PLANT	<i>APIOS PRICEANA</i>	PRICE'S POTATO-BEAN	E/LT	G2/S1
PLANT	<i>ARABIS MISSOURIENSIS</i>	MISSOURI ROCKCRESS	E	G4?Q/S1
PLANT	<i>ASTER CONCOLOR</i>	EASTERN SILVER Y ASTER	T	G4?/S2
PLANT	<i>ASTER DRUMMONDII</i> <i>VAR TEXANUS</i>	TEXAS ASTER	T	G5QT?/S2
PLANT	<i>ASTER HEMISPHERICUS</i>	TENNESSEE A STER	E	G4T4?/S1?
PLANT	<i>BAPTISIA BRACTEATA</i> <i>VAR LEUCOPHAEA</i>	CREAM WILD INDIGO	S	G4G5T4T5/S3
PLANT	<i>BARTONIA VIRGINICA</i>	YELLOW SCREWSTEM	T	G5/S1S2
PLANT	<i>CAREX ATLANTICA</i> <i>SSP CAPILLACEA</i>	PRICKLY BOG SEDGE	E	G5T5?/S1S2
PLANT	<i>COREOPSIS PUBESCENS</i>	STAR TICKSEED	S	G5?/S2S3
PLANT	<i>ERYNGIUM INTEGRIFOLIUM</i>	BLUE-FLOWER COYOTE-THISTLE	E	G5/S1
PLANT	<i>GYMNOPOGON AMBIGUUS</i>	BEARDED SKELETONGRASS	S	G4/S2S3
PLANT	<i>HALESIA TETRAPTERA</i>	MOUNTAIN SILVER-BELL	E	G5/S1S2
PLANT	<i>HELIANTHUS SILPHIOIDES</i>	SILPHIUM SUNFLOWER	E	G3G4/S1
PLANT	<i>HIERACIUM LONGIPILUM</i>	HAIRY HAWKWEED	T	G4G5/S2
PLANT	<i>HYDROLEA OVATA</i>	OVATE FIDDLELEAF	E	G5/S1
PLANT	<i>LILIUM SUPERBUM</i>	TURK'S CAP LILY	T	G5/S1S2

Table 3-2. State-Monitored Species of Calloway County, Kentucky (continued)				
Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
PLANT	<i>LYCOPODIELLA APPRESSA</i>	SOUTHERN BOG CLUBMOSS	E	G5/S1
PLANT	<i>MELANTHIUM VIRGINICUM</i>	VIRGINIA BUNCHFLOWER	E	G5/S1
PLANT	<i>MUHLENBERGIA GLABRIFLORIS</i>	HAIR GRASS	S	G4?/S3
PLANT	<i>OENOTHERA LINIFOLIA</i>	THREAD-LEAF SUNDROPS	E	G5/S1S2
PLANT	<i>OENOTHERA PERENNIS</i>	SMALL SUNDROPS	E	G5/S1S2
PLANT	<i>OLDENLANDIA UNIFLORA</i>	CLUSTERED BLUETS	E	G5/S1
PLANT	<i>PASPALUM BOSCIANUM</i>	BULL PASPALUM	S	G5/S2S3
PLANT	<i>PHLOX BIFIDA</i> SSP <i>BIFIDA</i>	CLEFT PHLOX	T	G5?T5?/S1S2
PLANT	<i>PTILIMNIUM CAPILLACEUM</i>	MOCK BISHOP'S-WEED	T	G5/S1S2
PLANT	<i>PTILIMNIUM NUTTALLII</i>	NUTTALL'S MOCK BISHOP'S-WEED	E	G5?/S1 S2
PLANT	<i>PYCNANTHEMUM ALBESCENS</i>	WHITELEAF MOUNTAINMINT	E	G5/S1
PLANT	<i>RHODODENDRON CANESCENS</i>	HOARY AZALEA	E	G5/S1
PLANT	<i>RHYNCHOSPORA GLOBULARIS</i>	GLOBE BEAKED-RUSH	S	G5/S3
PLANT	<i>SCLERIA CILIATA</i> VAR <i>CILIATA</i>	FRINGED NUTRUSH	E	G5T?/S1?
PLANT	<i>SILPHIUM LACINIATUM</i> VAR <i>ROBINSONII</i>	COMPASS PLANT	T	G5T?/S2
PLANT	<i>SPHENOPHOLIS PENNSYLVANICA</i>	SWAMP WEDGESCALE	S	G4/S1S2
PLANT	<i>SPIRANTHES ODORATA</i>	SWEETSCENT LADIES'-TRESSES	E	G5/S1

Table 3-2. State-Monitored Species of Calloway County, Kentucky (continued)				
Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
PLANT	<i>STELLARIA LONGIFOLIA</i>	LONGLEAF STITCHWORT	S	G5/S2S3
PLANT	<i>TREPOCARPUS AETHUSAE</i>	TREPOCARPUS	T	G4G5/S1S2
PLANT	<i>TRICHOSTEMA SETACEUM</i>	NARROWLEAF BLUECURLS	E	G5/S1S2
PLANT	<i>ULMUS SEROTINA</i>	SEPTEMBER ELM	S	G4/S3?
PLANT	<i>VIBURNUM NUDUM</i>	POSSUMHAW	E	G5/S1
GASTROPOD	<i>LITHASIA VERRUCOSA</i>	VARICOSE ROCKSNAIL	S	G?/S3S4
CRUSTACEAN	<i>PROCAMBARUS VIAEVIRIDIS</i>	A CRAYFISH	T	G5/S1
FISH	<i>ATRACTOSTEUS SPATULA</i>	ALLIGATOR GAR	E	G5/S1
FISH	<i>ERIMYSTAX INSIGNIS</i>	BLOTCHED CHUB	E	G3G4/S1
FISH	<i>ESOX NIGER</i>	CHAIN PICKEREL	S	G5/S2
FISH	<i>ETHEOSTOMA PARVIPINNE</i>	GOLDSTRIPE DARTER	E	G4G5/S1
FISH	<i>ETHEOSTOMA PROELIARE</i>	CYPRESS DARTER	T	G5/S2
FISH	<i>ICHTHYOMYZON CASTANEUS</i>	CHESTNUT LAMPREY	S	G4/S2
FISH	<i>ICHTHYOMYZON GAGEI</i>	SOUTHERN BROOK LAMPREY	H	G5/SH
FISH	<i>NOTURUS EXILIS</i>	SLENDER MADTOM	E	G5/S2
FISH	<i>UMBRA LIMI</i>	CENTRAL MUDMINNOW	T	G5/S2S3
AMPHIBIAN	<i>EURYCEA GUTTOLINEATA</i>	THREE-LINED SALAMANDER	T	G5/S2
AMPHIBIAN	<i>HYLA CINEREA</i>	GREEN TREEFROG	S	G5/S3
AMPHIBIAN	<i>RANA AREOLATA CIRCULOSA</i>	NORTHERN CRAWFISH FROG	S	G4T4/S3
REPTILE	<i>APALONE MUTICA MUTICA</i>	MIDLAND SMOOTH SOFTSHELL	S	G5T5/S3

Table 3-2. State-Monitored Species of Calloway County, Kentucky (continued)				
Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
REPTILE	<i>EUMECES ANTHRACINUS PLUVIALIS</i>	SOUTHERN COAL SKINK	E	G5T5/S1
REPTILE	<i>PITUOPHIS MELANOLEUCUS MELANOLEUCUS</i>	NORTHERN PINE SNAKE	T	G4T4/S2
REPTILE	<i>SISTRURUS MILIARIUS STRECKERI</i>	WESTERN PIGMY RATTLESNAKE	T	G5T5/S2
REPTILE	<i>THAMNOPHIS PROXIMUS PROXIMUS</i>	WESTERN RIBBON SNAKE	T	G5T5/S1
BIRD	<i>ACCIPITER STRIATUS</i>	SHARP-SHINNED HAWK	S	G5/S3B,S4N
BIRD	<i>AIMOPHILA AESTIVALIS</i>	BACHMAN'S SPARROW	E	G3/SX?B
BIRD	<i>ARDEA HERODIAS</i>	GREAT BLUE HERON	S	G5/S3B,S4N
BIRD	<i>CHONDESTES GRAMMACUS</i>	LARK SPARROW	T	G5/S2S3B
BIRD	<i>NYCTANASSA VIOLACEA</i>	YELLOW-CROWNED NIGHT-HERON	T	G5/S2B
BIRD	<i>PANDION HALIAETUS</i>	OSPREY	T	G5/S1S2B
BIRD	<i>THRYOMANES BEWICKII</i>	BEWICK'S WREN	S	G5/S3B
MAMMAL	<i>MYOTIS GRISESCENS</i>	GRAY MYOTIS	E/LE	G3/S2
MAMMAL	<i>NYCTICEIUS HUMERALIS</i>	EVENING BAT	T	G5/S2S3

Key to status, ranks, and count data fields in Table 3-2:

Status

KSNPC: Kentucky State Nature Preserves Commission status:

N or blank = none E = endangered T = threatened S = special concern H = historic X = extirpated.

USESA: U.S. Fish and Wildlife Service status:

N or blank = none C = candidate 3A = considered extinct LT = listed as threatened LE = listed as endangered PT = proposed as threatened PE = proposed as endangered
Three species have Federal statuses that need explanation:
LT/NL - Copperbelly Water Snake is Listed Threatened in most of its range, but is not Listed in Kentucky;
LT/NL - Bald Eagle is Listed Threatened in part of its range, including Kentucky; and
LE/NL - Interior Least Tern is Listed Endangered in most of its range including Kentucky.

Ranks

GRANK: Estimate of element abundance on a global scale:

G1 = extremely rare G2 = rare G3 = uncommon G4 = common G5 = very common GU = uncertain GH = historically known and expected to be rediscovered GX = extinct.
Subspecies and variety abundances are coded with a 'T' suffix; the 'G?' portion of the rank then refers to the entire species.

SRANK: Estimate of element abundance in Kentucky:

S1 = extremely rare S2 = rare S3 = uncommon
S4 = many occurrences S5 = very common SA = accidental
SRF = reported falsely in literature SU = uncertain SX = extirpated
SE = exotic ? = unknown SH = historically known in state
SZ = not of significant conservation concern SR = reported but without persuasive documentation S#B - breeding rank for non-resident species S#N - non-breeding rank for non-resident species

Count Data Fields

NUM OCCURRENCES: Number of occurrences of a particular element from a county.
Column headings are as follows:

E - currently reported from the county
H - reported from the county but not seen since before 1980
O - reported from county & cannot be relocated but for which further inventory is needed
X - known to have extirpated from the county
U - reported from a county but cannot be mapped to a quadrangle or exact location.

Many of these state-listed species undoubtedly do not occur at the Fort Heiman site at present, but their documented presence in Calloway County suggests that if they favor wooded habitat, there is a good chance they could occur at Fort Heiman, or could conceivably occur there in the future.

3.1.6.2 Stewart County Listed Species

Six federally-listed species have been documented in Stewart County, all of which are animals (USFWS, no date-b). Five species are endangered and one is threatened:

- Gray bat - *Myotis grisescens* (E)
- Indiana bat - *Myotis sodalis* (E)
- Bald eagle - *Haliaeetus leucocephalus* (T)
- Red-cockaded woodpecker - *Picoides borealis* (E)
- Pink mucket pearly mussel - *Lampsilis orbiculata* (E)

- Orange-footed pearly mussel - *Plethobasus cooperianus* (E)

Of these six, the two species of pearly mussel and the bald eagle are associated with aquatic habitats, and would not occur on any of the battlefield core area properties (except perhaps on the edge of Lake Barkley and the Bagard property). The gray bat was briefly described above.

The **Indiana bat** is a medium-sized myotis that closely resembles the little brown bat (*Myotis lucifugus*) but differing in coloration (USFWS, 1991). Little is known of this bat's food habits beyond the fact that it consumes insects. Females and juveniles forage in the airspace near the foliage of riparian and bottomland woods. Males forage the densely wooded area at tree top height. Maternity colonies of the Indiana bat are typically found under sloughing bark of dead and partially dead trees in upland and lowland forest. Limestone caves are used for winter hibernation.

This bat was declared endangered throughout its range in 1967. Its decline has been attributed to a variety of causes, including commercialization of roosting caves, destruction by vandals, disturbance by increased numbers of spelunkers and by bat banding programs, use of bats as laboratory experimental animals, and possibly insecticide poisoning. Indiana bat recovery efforts have included placing gates across cave entrances to eliminate disturbance of hibernating bats (Drobney and Clawson, no date). These exclusion devices have not halted population declines, suggesting that additional factors are adversely affecting bat populations.

Another potential threat to the Indiana bat is the loss of habitat used by maternity colonies. Maternity roost sites in dead trees exposed to sunlight and located in upland forests and near streams are particularly important. Losses of these sites through streamside deforestation and stream channelization represent major threats to recovery of Indiana bat populations.

The **red-cockaded woodpecker's** range is closely linked to the distribution of mature southern pines with open understories (USFWS, 1993), and its range has shrunk and been fragmented as these habitats have disappeared. Fire suppression, which has led to denser forests, has also contributed to the bird's demise. It was listed as endangered in 1970.

Suitable nesting habitat for the red-cockaded woodpecker is in open stands of pines with a minimum age of 80 to 120 years. Longleaf pines are favored, but other species of southern pine are also acceptable. Dense stands, including those with primarily hardwoods, or that have a dense hardwood understory, are avoided. Preferred foraging habitat is in pine and pine-hardwood stands 30 years old or older with foraging preference for pine trees.



Figure 3-2. Red-Cockaded Woodpecker (USFWS photo)

The occurrence of the red-cockaded woodpecker at either Fort Heiman or the battlefield core area properties is considered improbable, due to the paucity of southern pines at either site.

The USFWS also lists the following Species of Management Concern (SMC) as occurring in Stewart County, Tennessee. These are species that have the potential to be listed as federally endangered or threatened but currently have no legal protection under the Endangered Species Act:

- Lake sturgeon - *Acipenser fulvescens*
- Blue sucker - *Cycleptus elongatus*
- Alligator snapping turtle - *Macrolemys temmincki*
- Hellbender - *Cryptobranchus alleganiensis*
- Muddy rocksnail - *Lithasia salebroso*
- Varicose rocksnail - *Lithasia verrucosa*
- Fraser's loosestrife - *Lysimachia fraseri*
- Appalachian bugbane - *Cimicifuga rubifolia*

The Division of Natural Heritage of the Tennessee Department of Environment and Conservation (TDEC, 2002) has listed a number of species in Stewart County as endangered, threatened, or rare:

**Table 3-3. Tennessee Endangered, Threatened, Rare or Special Concern
Species Listed for Stewart County**

Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
PLANT	<i>APIOs PRICEANA</i>	PRICE'S POTATO-BEAN	LT / E	S2 G2
PLANT	<i>ASCLEPIAS PURPURASCENS</i>	PURPLE MILKWEED	S	S1 G4 / G5
PLANT	<i>AUREOLARIA PATULA</i>	SPREADING FALSE-FOXGLOVE	T	S2 G2 / G3
PLANT	<i>BAPTISIA BRACTEATA</i> VAR <i>LEUCOPHAEA</i>	CREAM WILD-INDIGO	S	S1 / S2 G4 / G5 T4 / T5
PLANT	<i>CAREX COMOSA</i>	BRISTLY SEDGE	T	S2 G5
PLANT	<i>CIMICIFUGA RUBIFOLIA</i>	APPALACHIAN BUGBANE	T	S3 / G3
PLANT	<i>ELEOCHARIS INTERMEDIA</i>	MATTED SPIKE-RUSH	S	S1 G5
PLANT	<i>HETERANTHERA LIMOSA</i>	BLUE MUD-PLANTAIN	T	S1 G5

Table 3-3. Tennessee Endangered, Threatened, Rare or Special Concern Species Listed for Stewart County (continued)				
Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
PLANT	<i>HIERACIUM LONGIPILUM</i>	HAIRY HAWKWEED	S	S1 / S2 G4 / G5
PLANT	<i>HYDRASTIS CANADENSIS</i>	GOLDENSEAL	S-CE	S3 G4
PLANT	<i>IRIS BREVICAULIS</i>	LAMANCE IRIS	E	S1 G4
PLANT	<i>JUGLANS CINEREA</i>	BUTTERNUT	T	S2 / S3 G3 / G4
PLANT	<i>LILIUM MICHIGANENSE</i>	MICHIGAN LILY	T	S2 G5
PLANT	<i>HIERACIUM LONGIPILUM</i>	HAIRY HAWKWEED	T	G4G5/S2
PLANT	<i>LIPARIS LOESELII</i>	FEN ORCHIS	E	S1 G5
PLANT	<i>LYSIMACHIA FRASERI</i>	FRASER'S LOOSESTRIFE	E	S2 G2
PLANT	<i>NEOBECKIA AQUATICA</i>	LAKE CRESS	S	S2 G4?
PLANT	<i>PANAX QUINQUEFOLIUS</i>	AMERICAN GINSENG	S-CE	S3 / S4 G3 / G4
PLANT	<i>PHACELIA RANUNCULACEA</i>	BLUE SCORPION-WEED	S	S3 G3 / G4
PLANT	<i>PHLOX PILOSA SSP OZARKANA</i>	OZARK DOWNY PHLOX	S	S1 G5T?
PLANT	<i>POPULUS GRANDIDENTATA</i>	LARGE-TOOTH ASPEN	S	S2 G5
PLANT	<i>PRENANTHES CREPIDINEA</i>	NODDING RATTLESNAKE-ROOT	E	S1 G3 / G4
PLANT	<i>RUDBECKIA SUBTOMENTOSA</i>	SWEET CONEFLOWER	T	S2 G5
PLANT	<i>SAGITTARIA BREVIROSTRA</i>	SHORT-BEAKED ARROWHEAD	T	S1 G5

Table 3-3. Tennessee Endangered, Threatened, Rare or Special Concern Species Listed for Stewart County (continued)				
Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
PLANT	<i>SALVIA AZUREA</i> VAR <i>GRANDIFLORA</i>	BLUE SAGE	S	G4 / G5 T4?
PLANT	<i>SYNOSMA</i> <i>SUAVEOLENS</i>	SWEET-SCENTED INDIAN-PLANTAIN	T	S2 G3
MOLLUSC	<i>LAMPSILIS ABRUPTA</i>	PINK MUCKET	LE E	S2 G2
BIRD	<i>AMMODRAMUS</i> <i>HENSLOWII</i>	HENSLOW'S SPARROW	MC D	S1B G4
BIRD	<i>AQUILA CHRYSÆTOS</i>	GOLDEN EAGLE	T	S1 G5
BIRD	<i>BUTEO LINEATUS</i>	RED-SHOULDERED HAWK		G5 S4B
BIRD	<i>DENDROICA</i> <i>CERULEA</i>	CERULEAN WARBLER	D	S3B G4
BIRD	<i>HALIAEETUS</i> <i>LEUCOCEPHALUS</i>	BALD EAGLE	LT D	S3 G4
BIRD	<i>LIMNOTHLYPIS</i> <i>SWAINSONII</i>	SWAINSON'S WARBLER	MC D	S3 G4
BIRD	<i>PODILYMBUS</i> <i>PODICEPS</i>	PIED-BILLED GREBE	S	S2 G5
BIRD	<i>POOECETES</i> <i>GRAMINEUS</i>	VESPER SPARROW	D	S1BS4N G5
MAMMAL	<i>MYOTIS GRISESCENS</i>	GRAY BAT	LE E	S2 G3
MAMMAL	<i>MYOTIS SODALIS</i>	INDIANA BAT	LE E	S1 G2
MAMMAL	<i>SOREX CINEREUS</i>	COMMON SHREW	D	S4 G5
MAMMAL	<i>SOREX</i> <i>LONGIROSTRIS</i>	SOUTHEASTERN SHREW	D	S4 G5
MAMMAL	<i>ZAPUS HUDSONIUS</i>	MEADOW JUMPING MOUSE	D	S4 G5

Table 3-3. Tennessee Endangered, Threatened, Rare or Special Concern Species Listed for Stewart County (continued)				
Taxonomic Group	Scientific Name	Common Name	Statuses	Ranks
REPTILE	<i>MACROCLEMYS TEMMINCKII</i>	ALLIGATOR SNAPPING TURTLE	MC D	S2 / S3 G3 / G4
REPTILE	<i>NERODIA ERYTHROGASTER NEGLECTA</i>	COPPERBELLY WATER SNAKE	(PS:LT)	HYB G5 T2 / T3
REPTILE	<i>PITUOPHIS MELANOLEUCUS MELANOLEUCUS</i>	NORTHERN PINE SNAKE	MC T	S3 G4 / T4
REPTILE	<i>SISTRURUS MILIARIUS STRECKERI</i>	WESTERN PIGMY RATTLESNAKE	T	S2 / S3 G5 / T5
FISH	<i>ANGUILLA ROSTRATA</i>	AMERICAN EEL		S3 G5
FISH	<i>CYCLEPTUS ELONGATUS</i>	BLUE SUCKER	MC T	S2 G3 / G4
FISH	<i>ICHTHYOMYZON UNICUSPIS</i>	SILVER LAMPREY	D	S2 G5
AMPHIBIAN	<i>CRYPTOBRANCHUS ALLEGANIENSIS</i>	HELLBENDER	MC D	S3 G4

Source: TDEC, 2002. See Table 3-2 for codes.

Many of these state-listed species undoubtedly do not occur at the eligible battlefield core area properties at present, but their documented presence in Stewart County suggests that if they prefer wooded habitat, there is a good chance they could occur at these properties, or could conceivably occur there in the future.

3.2 CULTURAL RESOURCES

Cultural resources include: historic properties as defined in the National Historic Preservation Act (NHPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archaeological resources as defined in the Archeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access To "Indian Sacred Sites,"* to which access is provided under the American Indian Religious Freedom Act (AIRFA), and collections. As defined by the NHPA, a

historic property or historic resource is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of traditional religious and cultural importance (traditional cultural properties), which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an Indian tribe or Native Hawaiian organization. Archaeological resources include any material of human life or activities that is at least 100 years old, and that is of archaeological interest.

Historic Property: Sites, buildings, structures, or objects that may have significant archaeological and historic values, or properties that may play a significant traditional role in a community's historical-rooted beliefs, customs, and practices.

National Register of Historic Places (NRHP): A nationwide listing of districts, sites, buildings, structures, and objects of national, state, or local significance in American history, architecture, or culture. Historic properties are entered into the NRHP by the Keeper of the National Register.

Section 106 of the NHPA (P.L. 89-655) provides the framework for Federal review and consideration of cultural resources during Federal project planning and execution. The implementing regulations for the Section 106 process (36 CFR Part 800) have been promulgated by the Advisory Council on Historic Preservation (ACHP). The Secretary of the Interior maintains the NRHP and sets forth significance criteria (36 CFR Part 60) for inclusion in the register. Cultural resources may be considered "historic properties" for the purpose of consideration by a Federal undertaking if they meet NRHP criteria. The implementing regulations at 36 CFR

800.16(v) define an undertaking as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency." Historic properties are those that are formally placed in the NRHP by the Secretary of the Interior, and those that meet the criteria and are determined eligible for inclusion.

Fort Donelson National Battlefield was added to the NRHP in 1966 (District - #66000076) and the Fort Henry site was added to the NRHP in 1975 (Site - #75001789) (NRHP, no date-a). The Fort Heiman site was added to the NRHP the year after Fort Henry's inclusion, in 1976 (Site - #76000856) (NRHP, no date-b). Table 3-4 shows the NRHP listings for the three forts.

Table 3-4. National Register of Historic Place Listings

Characteristic	Fort Donelson National Battlefield, Stewart County, Tennessee	Fort Henry Site, Stewart County, Tennessee	Fort Heiman Site, Calloway County, Kentucky
Historic Significance	Event	Information Potential	Event
Area of Significance	Military	Military	Military

Cultural Affiliation	--	American	--
Period of Significance	1850-1874	1850-1874	1850-1874
Owner	Federal	Federal	Private
Historic Function	Defense, Domestic	Defense	Defense
Historic Sub-function	Battle Site, Fortification, Hotel	Fortification	Battle Site, Fortification
Current Function	Funerary, Landscape, Recreation And Culture	Landscape	Defense
Current Sub-function	Cemetery, Museum, Park	Park	--

Sources: NRHP, no date-a; NRHP, no date-b.

A National Historic Landmark (NHL) is a special type of historic property designated because of its national importance in American history, architecture, archaeology, engineering, or culture. Section 800.10 of the ACHP's regulations (36 CFR 800), as well as Section 110(f) of the NHPA, specify special protections for NHLs. None of the three sites is a designated NHL (NPS, 2002).

While National Historic Landmark and National Register status are a source of honor for landowners and the community, they grant no legal protection to the resources from the actions and development decisions of private landowners. Nevertheless, NHL or NRHP designations can trigger protection if state and/or local laws link such listing to protection requirements.

National Historic Landmark (NHL): A special type of historic property designated by the Secretary of the Interior because of its national importance in American history, architecture, archaeology, engineering, or culture.

3.2.1 Fort Heiman

The Fort Heiman complex consists of two primary areas of interest—Fort Heiman proper and what has been called the “Outer Battery” or “Federal Fort.” NPS cultural resources staff conducted a GPS survey and prepared GIS maps at both forts in the summer of 2002 (Lowe, 2002).

Fort Heiman sits at the end of Fort Heiman road and extends along the high ground of a peninsula that juts into Kentucky Lake from the west. The strategic importance of this location was its proximity to the old channel of the Tennessee River (within 200 meters). From these bluffs, artillery could bring a plunging fire against gunboats and troop transport ships, in support of Fort Henry, on the opposite side of the river.

Although the Fort Heiman property was subdivided some years ago, only two structures have been constructed at the site (one unfinished). The earthworks are readily visible and largely intact. In this area, there are 593 meters (648 yards) of surviving military earthworks, 325 meters (55%) of which were assessed to be in good or fair condition, the remainder in poor. Several segments suffered degradation due to road construction, during which the rear ditch was

filled. The earthworks range in relief from 0.7 to about 2 meters (2-6 feet). With one exception, all were constructed with a rear ditch.

A shallow shelf along the bluff may be evidence of Federal destruction of the earthworks when troops abandoned the area in 1863. This shelf appears to have been the bottom of an interior ditch, the parapet having been shoveled down the bluff. The remaining earthworks were likely improved or built by the Federal occupation force in 1862-1863. Without an archeological assessment or unless a historic map is found, there is no way to determine the original extent of the Confederate fort or subsequent Federal defenses.

At the south end of the site, nine pits were observed and mapped which are said to be graves from which human remains were later removed. Each pit was six feet long; two were nine feet wide, two five feet wide, the rest wide enough for a single burial. This probably represents the reinterment of fifteen bodies. Farther north is another pit similar to a single burial. Between these gravesites is a large rectangular hole believed to be the remains of the fort's magazine. Adjacent is a smaller hole with a communication trench leading down the bluff toward the water. The area is strewn with old firebricks suggesting that the magazine may have had a brick lining that was afterwards scavenged for reuse. Taken together, these resources represent an intact fortification site, a critical part of the Fort Henry complex that would likely provide considerable archeological information. As of yet, no archaeological surveys have been conducted at Fort Heiman.

The Federal Fort is located where two historic roads climbed out of the river bottom to join what is now Fort Heiman Road, about 830 meters inland from the works at Fort Heiman proper. The fort is an irregular redoubt designed to support three or four guns with an inner perimeter (along the parapet) of 258 meters and an outer perimeter (outer edge of the ditch) of 308 meters. The parapet encloses nearly 0.7 acre, which makes it comparable in size to most of the Federal forts found along the Petersburg, Virginia, lines. It is similar in size to other Tennessee River garrison forts, as at Johnsonville. In other words, this was the *principal* Federal fortification at Fort Heiman, not merely an outer work or detached battery.

Relief at the parapet averages about 3.6 meters (12 feet). The site is overgrown with vegetation, restricting access and maintaining the resources in fair and good condition. Two gun platforms were observed and mapped in the northwest and southwest angles. Field guns here were sited to command all avenues of approach from the west. Two angles in the south face likely held artillery to generate a crossing fire with the single gun at Fort Heiman. The north face of the fort shows evidence of purposeful destruction, probably by vacating Federal troops. The protective breastwork has been partially leveled; earth was thrown back into the fort and down into the ditch. The sally port is in the northeast angle of the fort. Leading from the rear of the sally port, two road traces join a very well defined wagon road that extends all the way to the water, and the original river landing. The area is crisscrossed with old road traces, but the wagon road appears the oldest and maintains a steady 5 percent grade.

The Federal Fort effectively secured a defensive perimeter extending from Fort Heiman in the south to the next ravine north of the site – an enclave of about 225 acres. Based on the terrain, the siting and configuration of the earthworks here and at Fort Heiman, and practices at other

military sites, it would be reasonable to assume that the garrison camps were in the ravine southeast of the fort. The NPS survey team examined this ravine and located what appeared to be a hut pad on the slope south of the fort with an easy, perhaps, reworked descent to the ravine floor. Several rectangular dugouts, measuring about 2 x 2 x 1 meters (6 x 6 x 3 feet), were also mapped. Although suggestive, this was certainly not conclusive evidence of an encampment. The floor of the ravine has suffered serious erosion over the years and in some areas may be three to four feet below the Civil War era grade.

In terms of military earthworks, the Federal Fort is the most outstanding resource at the site. It was, however, only the key installation of an extensive fortification, encampment, and road complex that is likely to yield extensive archeological information. At the time of the 2002 survey, loggers were clearcutting a parcel north of the Federal Fort. Although not directly impacting the earthworks, this logging will obliterate the old road trace leading through the parcel.

3.2.2 Ten Eligible Battlefield Core Area Properties

As emphasized in Section One, FODO's current boundaries encompass only about 20 percent of the core area of the historic battlefield, as identified by the American Battlefield Protection Program. The ten properties discussed below each contain significant historic resources that retain a high degree of integrity. They also have relatively high potential for archeological survey and research. Although impacted by erosion and the expansion of Dover, these lands and their immediate surroundings generally possess a high degree of their historic woodlands and pastoral character. They contain historically significant resources and scenic vistas in which significant elements of the Battle of Fort Donelson can be interpreted.

Forge Road Parcel (Cherry and Bagard properties). At daybreak on February 15, 1862, after having positioned most of their forces opposite the Union right flank, the Confederates launched an attack to open an escape route to Nashville, Tennessee. The extreme Union right was pushed back fairly easily as this concentrated Confederate attack pressed them. They fell back to other units of Brig. Gen. John A. McClernand's division and began to hold. McClernand's division turned and met the Confederate attack, and for about three hours fought battle line to battle line while slowly and grudgingly giving ground. Lack of ammunition and the determined Confederate attack forced McClernand's division to give way.

This three-hour time period saw the heaviest infantry fighting of the Battle of Fort Donelson. In this general area near the Forge Road, 70 percent of the Union casualties fell. Confederate casualty records are not as good, but we can assume an equal or higher percentage of their casualties fell in this same area. The Forge Road parcel is FODO's equivalent to Shiloh's Hornets Nest, Antietam's Bloody Lane, and the area of Pickett's Charge at Gettysburg.

French's Battery and Erin Hollow Parcels (Bell and Carson properties). Following the success of the Confederates at Forge Road, McClernand's division fell back hoping to regroup. Brig. Gen. Lew Wallace brought his division to McClernand's aid and formed a battle line across Wynns Ferry Road. This line created a new obstacle for the attacking Confederate forces.

The French's Battery and Erin Hollow parcels are located between the Confederate earthworks (park boundary) and the Wallace position along Wynns Ferry Road (south of park boundary) and are contiguous to the present park boundary. Men from Brig. Gen. Simon B. Buckner's Division fell back to their earthworks to regroup and issue ammunition. Once they were reformed into battle lines, they charged across these parcels and attacked the Wallace position on Wynns Ferry Road. These attacks were unsuccessful, and the Confederate offensive began to falter. Although the desired escape routes were open, the Confederate generals decided not to make their escape, but rather to return inside their earthworks without leaving forces to protect those routes. This decision would result in the capture of the Confederate force at Fort Donelson. This Confederate withdrawal of forces crossed the French's Battery and Erin Hollow parcels.

Wynns Ferry Road Parcel (Grant Rallies the Troops) (Wallace property). Before daylight on February 15, Grant decided to travel several miles downstream to the riverbank where the Union gunboats had tied up. He was unaware of the impending Confederate attack on his right flank. As the Confederate attack pressed forward, riders were sent and eventually found Grant at the river. They informed him of the dire situation, and Grant began making his way back to his troubled lines. Hurrying along his lines, Grant found McClernand's division trying to reform and Wallace's division on Wynns Ferry Road. He found officers and men wandering around not knowing what to do. From captured Confederate soldiers, Grant deduced quickly that they were trying to leave; he also concluded that if the Confederates hit hard in one place, other positions must be poorly defended. Thus, he ordered that the area lost earlier in the day be retaken and that a poorly defended position be attacked. Confederate inability to take this position and Grant's ability to rally his troops assured a Union victory.

News accounts of Grant chewing on a dead cigar and his demand for an "Unconditional Surrender" gave him a new nickname and helps to explain how a clerk in a leather store could rise to major general in command of the Union army and become its first hero in such a short time. Grant was propelled into national prominence, eventually accepting Confederate surrender at Appomattox. His popularity ultimately carried him to the White House. Grant's early victories had a great effect on his career, the outcome of the Civil War, and American history.

The effect the victory at Fort Donelson had on Grant's career is an important interpretive theme for this park. The Wynns Ferry Road Parcel contains some of the area where Wallace's division deployed to stop the Confederate attack and the area where Grant rode up to his rendezvous with destiny. This area is not contiguous with the present boundaries of FODO. It is in an area of development.

Smith's Attack Parcel (Smith, Truitt, Norfleet and Herndon properties). By daybreak on February 15, Confederate generals had massed their forces opposite the Union right and were preparing an attack in order to open an escape route to Nashville, Tennessee. The attack was launched and was initially successful. The Union right was pushed off the battlefield and the escape routes were opened. When Grant reached the battlefield and made his assessment of the situation, he concluded that the Confederates must have weakened their lines someplace else to be able to hit his forces so hard in this location. After rallying the troops on his right, he rode off to his left flank occupied by Brig. Gen. Charles F. Smith's division. He informed Smith that the

enemy was trying to escape but had been stopped and must be demoralized. Now was the time to attack and carry the fort. Smith moved his division against the Confederate works in his front. Because most of the Confederates were massed on the other side of the earthworks (more than a mile away), Union soldiers were able to climb the hill and sweep over the Confederate works. Reinforcements and lateness in the day prevented Smith's division from taking the main fort. Still, the Union had a firm grip on the Confederate right flank. During the night of February 15, Union soldiers camped where Confederate soldiers had camped the night before. This action gave the Confederate generals another reason to consider surrender as they discussed their next course of action.

During this attack a corporal in the color guard picked up the flag after other color guards had been wounded. Although wounded himself, the corporal bore the flag to the end of the engagement. For this feat Voltaire Twombly was awarded the Medal of Honor. His Medal of Honor is on display in the Fort Donelson National Battlefield Visitor Center.

This area was between Union and Confederate lines, and the right flank of Smith's division crossed it during the attack. This parcel is contiguous to the park boundary, very near the visitor center.

Freedmen's Camp Parcel (Lee property). The effects of the fall of Fort Donelson were felt across the country economically, socially, and militarily. In the middle Tennessee area, it had an immediate effect on the slave population. The presence of the Union Army provided another opportunity for slaves willing to seek freedom. Grant, lacking any established policy from Washington, decided not to return slaves to their owners and put them to work helping the Union Army. As word of the surrender went out across the land, freedom-seeking slaves began leaving their owners and traveling secretly to Dover, Tennessee, and the protection of the Union Army. Before long, fugitive slaves were housed in sheds, cellars, and barns in town. If not free to come and go as they pleased, they were at least protected from their owners as long as they were under the watchful eye of the Union army. Unofficial and later formal camps were set up for them. Thousands of freedom-seeking former slaves came through this camp during its existence. Some men were recruited into the Union Army. Soldiers and civilians helped a few of the former slaves to travel farther north in hopes of finding the freedom they so desperately desired.

This parcel is contiguous to the park boundary and included the area of the Freedmen's Camp. Acquiring this parcel would protect the site and provide an excellent location to interpret this largely untold and misunderstood story. Fort Donelson National Battlefield is a designated site for the National Underground Railroad Network to Freedom program, and this parcel would enable the National Park Service to interpret this significant theme.

3.3 VISITOR USE AND EXPERIENCE

Visitor or recreation experience is defined as “the psychological and physiological response from participating in a particular recreation activity in a specific park setting” (Haas, 2001). Visitor use and experience are a function of the interaction between an individual’s expectations,

motivations, past experiences, and personality traits and the recreational carrying capacity of a park. Recreational carrying capacity is defined as “a prescribed number and type of people that an area will accommodate given the desired natural/cultural resource conditions, visitor experiences, and management program” (Haas, 2001). The carrying capacity for a park is formed by the convergence of two human and physical constraints: 1) what is considered to be a crowded condition, given the park’s physical and environmental resources and the visitor experience intended by management, and 2) the level of use that a park can sustain without suffering environmental degradation.

Visitor/Recreation Experience:

The psychological and physiological response from participating in a particular recreation activity in a specific park setting.

Source: Haas, 2001

The NPS defines recreational carrying capacity as “the type and level of visitor use that can be accommodated while sustaining the desired resource and social conditions that complement the purpose of a park unit and its management objectives” (VERP, 1997). Broadly, it is the maximum number of people that can use a site on an hourly, daily, monthly, or annual basis without degrading the resource base, and while maintaining the integrity of the historic experience. A site’s carrying capacity is restricted by several factors, including:

- 1) the type of visitor experience desired by park managers;
- 2) the level of resource protection needed to maintain that visitor experience;
- 3) assurance of visitor safety; and
- 4) park staffing levels (NPS, 2000b).

Visitor use and experience at a national park is defined by undergoing a carrying capacity analysis (VERP, 1997). The bases for such an analysis are mission, purpose, and significance statements. A mission statement lays the foundation for the management of a national park. The purpose statement indicates why the park became a part of the national park system. The significance statement describes the park’s role in the regional and national context (NPS, 2000b). A VERP analysis is typically done as part of a park’s General Management Plan (GMP). Fort Heiman and the eligible properties, if added to Fort Donelson National Battlefield, will be incorporated in FODO’s GMP when it is updated in the next several years. To date, there has not been an official carrying capacity analysis done for either of the two sites.

Currently, because Fort Heiman and the battlefield core area properties are mostly private property, they receive very little visitation by the public. There are no designated parking facilities, no interpretive signs, no access trails and no comfort facilities for the public. Nonetheless, both Fort Heiman and the battlefield core area properties would lend themselves to visitation and interpretation. They provide excellent opportunities for interpretive/ recreational trail possibilities, interpretive media, waysides, related exhibits, small-scale off-road parking, and non-personal services.

Forts Heiman, Henry and Donelson are all located in an area with extensive recreational infrastructure, resources, activities and opportunities, focused on the natural and historic features of the region. Fort Donelson’s educational and recreational value has already been described in

Chapter One. It attracts approximately one million visitors per year. The other most important major recreational facilities of the area are listed below:

Land Between the Lakes National Recreation Area

The northwest-southeast lobe of land between Kentucky Lake on the Tennessee River to the west and Lake Barkley on the Cumberland River to the east is called Land Between the Lakes. It was formed when these two reservoirs were created by the construction of Kentucky Dam and Barkley Dam. In 1963, President John F. Kennedy designated the peninsula as “Land Between The Lakes National Recreation Area” in an effort to demonstrate how an area with limited forest, agricultural and industrial resources could be developed into a recreational asset that would stimulate economic growth in the region. Forty decades later, LBL remains the country's only such demonstration and is the cornerstone of the region's \$600 million tourism industry (LBL, 2002b).



Figure 3-3. Sailboating at Land Between the Lakes

LBL, formerly managed by the Tennessee Valley Authority, is now managed by the U.S. Forest Service. It attracts more than two million visitors annually (Madell, 2002), with visitors arriving from all 50 states and over 30 foreign countries (LBL, 2002b). LBL is the largest inland peninsula in the United States. It is also the second-largest contiguous block of forested public land east of the Mississippi. There are 300 miles of undeveloped shoreline within LBL.

LBL includes 26 lake access areas with boat ramps, five courtesy docks, four fishing piers and six beaches. It contains 420 miles of roads, more than 90 bridges; and 5 dams. LBL's recreational facilities include a nature center, living history farm, planetarium and observatory, resident center, horseback riding campground, public horse stable, off-highway vehicle area, Elk & Bison prairie, interpretive site (iron industry), and three visitor information centers. It has over 200 miles of hiking and biking trails and over 80 miles of horse and wagon trails. Four developed campgrounds contain 1,535 campsites in four developed campgrounds. There are also five lake access areas with primitive camping and unlimited backcountry camping.

In addition to Fort Henry, LBL has two other sites listed on the National Register of Historic Places – the Center Furnace and the Great Western Iron Furnace – both of which are remnants of

the regional iron industry which reached its heyday in the mid-1800s. Seventeen iron furnaces operated within what is now LBL.

LBL has abundant wildlife resources. It includes the largest publicly-owned buffalo herd east of the Mississippi River, more than 1,300 plant species, over 230 bird species, and 53 different mammal species. LBL is participating in the nation's efforts to re-establish the bald eagle population in Western Kentucky and Tennessee: between 1980-1988, 44 Bald Eagles were reintroduced to the shorelines of LBL. Currently, LBL is home to a wintering eagle population of more than 150 birds, and there are 11 active nesting sites. In February 1996, after a 150-year absence in the region, LBL reintroduced elk into a 700-acre Elk & Bison Prairie. Since 1991, LBL has maintained a captive breeding pair of red wolves as part of the USFWS's Red Wolf Recovery effort.

Paris Landing State Park

The 841-acre Paris Landing State Park is situated on the western shore of Kentucky Lake, 18 miles east of the town of Paris and approximately 15 miles west of Dover, on US Highway 79 (TA, 2002). Paris Landing State Park is named for a steamboat and freight landing on the Tennessee River, dating back to the mid-nineteenth century. From here and other landings on the Tennessee River and Big Sandy River, supplies were transported to surrounding towns and communities by ox cart.



Figure 3-4. Golfing at Paris Landing State Park, Kentucky Lake behind

Among other facilities, the state park has a conference center, resort inn, restaurant, cabins, and golf course (Figure 3-4). Paris Landing provides opportunities for camping, boating, fishing, hiking, picnics and swimming. Annual visitation averages approximately 1.0 to 1.2 million (Noble, 2002).

Cross Creeks National Wildlife Refuge

Cross Creeks NWR is located four miles east of Dover at the confluence of North Cross Creek and South Cross Creek with the Cumberland River / Lake Barkley (USFWS, 1999). The 8,862-acre refuge straddles the Cumberland River and provides feeding and resting habitat for migratory waterfowl in the Tennessee-Kentucky portion of the Mississippi flyway.

Cross Creeks also supports over 650 species of plants and 480 species of birds, mammals, fish, reptiles and amphibians. Annual visitation at the refuge averages 65,000-70,000 and includes wildlife observation, fishing, archery hunting for deer, and hunting for wild turkey (Welker, 2002).

Lake Barkley State Resort Park

This Kentucky state park is located on the east side of Lake Barkley, about half way up the LBL peninsula, approximately 20 miles north of Fort Donelson. It has a 120-room lodge, 10-room lodge, cottages, dinning room, convention center, fitness center and marina (Kentucky State Parks, 2002). The park provides opportunities and facilities for water sports, tennis, golf, horseback riding, hiking and nature trails, and mountain biking. Annual visitation averages 1.25 million for all purposes (Jordan, 2002).

Kenlake State Resort Park on the west side of Kentucky Lake northeast of Murray, and Kentucky Dam Village State Resource Park further to the north also offer a wide variety of outdoor recreation opportunities.

In sum, the region in which Fort Heiman, Fort Henry and Fort Donelson are situated draws millions of visitors annually for outdoor recreation, ecotourism and heritage tourism.

3.4 SOCIOECONOMIC ENVIRONMENT

3.4.1 Population, Economy, and Social Conditions

Table 3-5 displays key basic demographic and socioeconomic data about the populations of Calloway County, Kentucky (location of Fort Heiman) and Stewart County, Tennessee (location of Fort Henry). Both counties have populations that have grown at a faster rate than their respective states over the past decade (USCB, 200a; USCB, 2000b). Both counties are overwhelmingly non-Hispanic white. The median household incomes of both counties are slightly below the their state medians. Their predominantly rural character would account for this. Poverty rates in each county are also below the state average. They differ in one important respect: while Calloway County's non-farm employment grew at twice the rate Kentucky's in the 1990's, Stewart County's actually shrank by 22% during the same period.

Table 3-5. Demographic and Economic Data for Calloway County, Kentucky and Stewart County, Tennessee

	Calloway County	Kentucky	Stewart County	Tennessee
Population, 2001 estimate	34,206	4,065,556	12,650	5,740,021
Population, percent change, 1990 to 2000	11.2%	9.6%	30.5%	16.7%
White persons, % 2000 (a)	93.5%	90.1%	95.3%	80.2%

Black or African American persons, percent, 2000 (a)	3.6%	7.3%	1.3%	16.4%
American Indian and Alaska Native persons, percent, 2000 (a)	0.2%	0.2%	0.6%	0.3%
Asian persons, percent, 2000 (a)	1.3%	0.7%	1.5%	1.5%
Persons of Hispanic or Latino origin, percent, 2000 (b)	1.4%	1.5%	1.0%	2.2%
White persons, not of Hispanic /Latino origin, percent, 2000	92.7%	89.3%	94.6%	79.2%
Housing units, 2000	16,069	1,750,927	5,977	2,439,443
Homeownership rate, 2000	68.4%	70.8%	79.2%	69.9%
Median household money income, 1997 model-based estimate	\$29,853	\$31,730	\$28,473	\$32,047
Persons below poverty, percent, 1997 model-based estimate	14.5%	16.0%	13.2%	13.6%
Private non-farm employment, 1999	11,776	1,469,315	984	2,338,780
Private non-farm employment, percent change 1990-1999	47.0%	23.9%	-21.7%	25.1%

Sources: USCB, 2002a; USCB, 2002b

Table 3-6 shows employment by major industry in Calloway County:

Table 3-6. Employment by Major Industry in Calloway County, Kentucky		
	Employment	Percent
All Industries	16,052	100.
Agriculture, Forestry & Fishing	115	0.7
Mining and Quarrying	N/A	N/A
Contract Construction	894	5.6
Manufacturing	3,212	20.0
Transportation & Public Utilities	1,245	7.8
Wholesale Trade	663	4.1
Retail Trade	3,640	22.7
Finance, Insurance and Real Estate	332	2.1
Services	3,694	23.0
State and Local Government	448	2.8
Other	3	0.0

Sources: WKC, 2002b; U.S. Dept. of Labor, Bureau of Labor Statistics

Murray is the county seat of Calloway County, and contains almost half its residents (WKC, 2002b). The town is home to Murray State University, with an enrollment of about 9,100. One of the town and county's major employers, a Mattel factory, announced in April 2001 that it would be closing down, with the loss of some 1,000 jobs (Gordon, 2002). In June 2002, a company manufacturing custom windows and doors factory announced that it would open in a

portion of the vacated space, employing some 250 at first. Murray is located approximately 12 miles to the northwest of Fort Heiman.

The Calloway County community has expressed strong support for protection of the Fort Heiman site by the National Park Service. A May 2002 public meeting at Murray State University organized by the NPS and local historic preservationists drew some 70 participants who were unanimous in the support of the proposed action. County government is supportive as well (Gordon, 2002).

Table 3-7. Employment by Occupation in Stewart County, Tennessee	
Technical, Sales	24%
Handlers, Laborers	8%
Transportation	8%
Farm, Forestry	7%
Production, Craft, Repair	20%
Service	16%
Administrative, Executive	18%

Source: CLS, 1995

In recent years, Stewart County has attracted new residents from around the state and region, many of whom are retirees, drawn by the area's low cost of living and amenities (Hanks, 2002; Wallace, 2002). Both the public and the county government in Stewart County are supportive of efforts to provide greater protection and interpretation of Civil War resources associated with Fort Donelson National Battlefield (Wallace, 2002). County government itself is participating in efforts to enhance recreational opportunities and the quality of life in the area; for example, Stewart County, in cooperation with the USFS and LBL, has received matching funds from the Tennessee Department of Transportation to construct the Fort Donelson/Kentucky Lake Hike and Bike Trail in two phases. When completed, this trail will connect Dover and Fort Donelson with the Fort Henry area of LBL, and beyond to Paris Landing State Park on the western side of Kentucky Lake (Stewart County, 2002) (Figure 3-5).

3.4.2 Utilities and Public Services

Utilities include the following kinds of facilities and infrastructure:

- Energy – gas pipelines and substations, electricity transmission and distribution lines, and electrical substations;
- Communications – telephone lines, cable TV lines, and communications towers;
- Water supply – water lines and water storage tanks; and
- Wastewater – sewage pipelines and sewage treatment plants.

Public services generally include the following services provided by local municipalities:

- Fire protection;

- Law enforcement; and
- Emergency medical response.

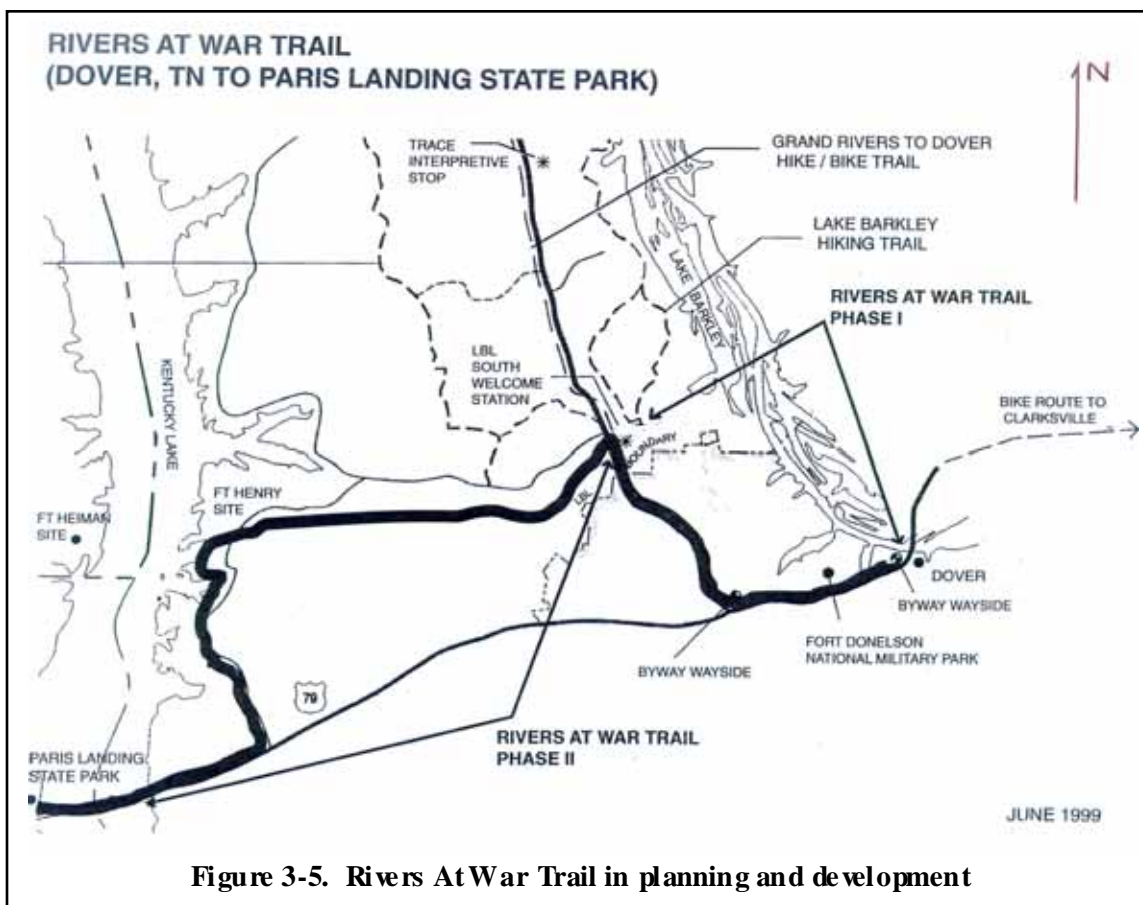


Figure 3-5. Rivers At War Trail in planning and development

In Calloway County, electricity is supplied by the Murray Electric System and West Kentucky RECC (WKC, 2002b). Murray Electric System also furnishes cable and telephone service to residents of that area (MES, 2000). Natural gas is supplied by the Murray Natural Gas System. Water and sewer are supplied by the Murray Water and Wastewater System. Outlying areas may have their own water wells and septic tanks. There are no overhead utility lines evident at the Fort Heiman site.

The Murray Calloway County Hospital furnishes ambulance service in the county (MCCH, 2000). The Calloway County Sheriff's Office in Murray provides law enforcement as well as initial response in emergencies and some search and rescue (USACOPS, 2002a). Calloway County Fire-Rescue in Murray provides fire and hazardous materials (hazmat) protection, extrication (people and pets stuck in tight places) as well as search and rescue services in the county (CCFR, 2001). The fire-rescue department operates out of nine stations that protect a primarily rural area; it is a public department whose members are volunteers.

In Stewart County, the TVA is the source of electricity and the local supplier is the Cumberland Electric Memorial Corp. (MTIDA, 2002). In the county seat and largest town of Dover, the city itself is the water supplier and sewer authority. Water is withdrawn from the Cumberland River. There is no local distributor of natural gas. BellSouth supplies telephone service to Dover and Stewart County (Kentucky Lake Productions, 2002). No overhead utility lines are evident at the Fort Henry site.

The town of Dover has a budget of about \$1.4 million annually, which includes services like water, sewer, police, fire, garbage pickup, and limb removal. The city has five full-time police officers. The Dover Fire Department has four engines and 24 volunteer fire fighters (Kentucky Lake Productions, 2002). The Stewart County Sheriff's Office is also located in Dover (USACOPS, 2002b).

There is no 24-hour emergency room located in Stewart County. The nearest emergency room is located at Trinity Hospital in Erin, Tennessee, approximately 15-20 minutes from Dover. Emergency rooms are also found in nearby Murray, Kentucky, and Clarksville, Tennessee (Kentucky Lake Productions, 2002).

3.5 TRANSPORTATION

The principal east-west route connecting Fort Donelson and Dover in eastern Stewart County with Fort Henry in western Stewart County and Fort Heiman in Calloway County, Kentucky, is U.S. Route 79, which in this segment is coincident with State Route 76. Rte. 79-76 is mostly two lanes with several three-lane passing sections on longer hills. The speed limit is 55 mph and traffic generally flows unimpeded. Across Kentucky Lake and into Calloway County, Kentucky, a traveler to Fort Heiman coming from Fort Donelson would turn north on Kentucky State Route 121, before turning onto smaller roads to access the fort itself.

Arterial Road: A roadway that provides the highest level of service at the greatest speed for the longest uninterrupted distance with some degree of access control.

Source: FHWA, 1999

The Federal Highway Administration (FHWA) classifies roads based on their function. According to the FHWA, an arterial road is one that provides the highest level of mobility, at the highest speed, for long, uninterrupted travel. Arterial roads generally have higher design standards than other roads, and they typically have multiple lanes and some degree of access control. An example of an arterial network is the Interstate Highway System. Urban areas are generally defined by FHWA as metropolitan areas with populations greater than 25,000 people (FHWA, 1999). Dover does not fit this criterion; therefore, Highway 79-76 is classified as a rural principal arterial. The FHWA divides the rural principal arterial network into two

Collector Road: A roadway that provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterial roads.

Source: FHWA, 1999

subsystems: interstate highways and other principal arterials (FHWA, 1999). Highway 79-76 can be classified as a principal rural arterial road.

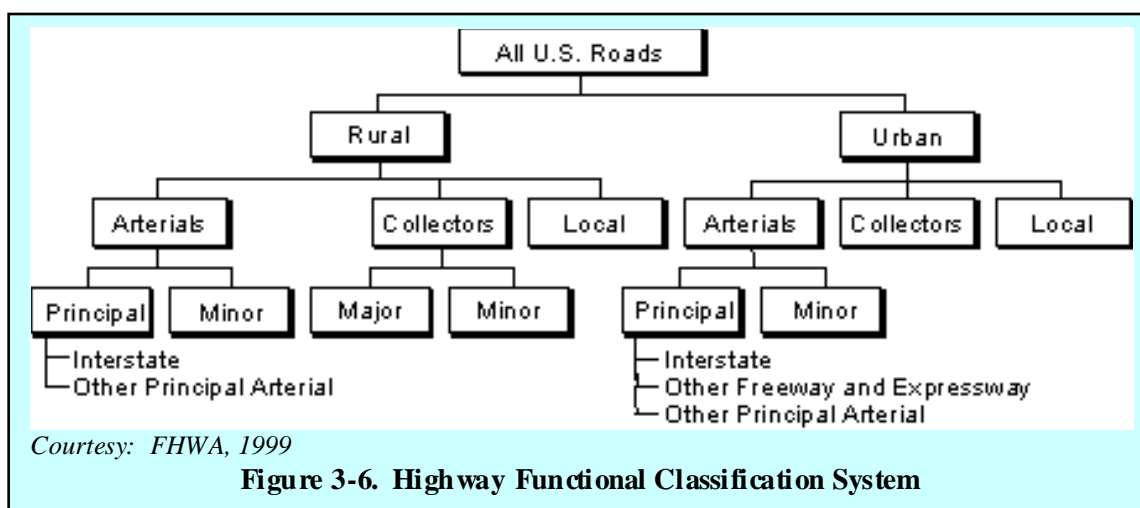
The main roads in the affected areas of Calloway County, Kentucky and Stewart County, Tennessee are arterial, collector and local roads, both rural and urban. The roads leading to Fort Heiman are rural while those leading to the ten eligible battlefield core area properties around Fort Donelson proper, are both rural and urban, in that they are located within Dover itself and in the urbanizing periphery of Dover between the town and surrounding countryside.

Collector roads provide a lower degree of mobility than arterial roads. They are designed for travel at lower speeds and for shorter distances. Collector roads are typically two-lane roads that collect and distribute traffic from the arterial system. The rural collector system is divided into two subsystems: major and minor collector roads. Major collector roads provide service to county seats and important industrial or agricultural centers that generate significant traffic volumes, but are avoided by arterial roads. Rural minor collector roads collect traffic from local roads (FHWA, 1999). Urban collector streets are not divided into two categories.

All public road mileage below the collector system is considered local. Local roads provide basic access between residential and commercial properties, connecting with collector roads and arterial roads (FHWA, 1999). This road classification system is shown in Figure 3-6.

Local Roads: All roads not defined as arterials or collectors. Local roads primarily provide access to land with little or no through movement.

Source: FHWA, 1999



Examples of the classifications for roads in the affected areas of Kentucky and Tennessee are shown in Table 3-8. All five kind of rural road classifications are represented. These roads are built with road widths, design speeds, and number of lanes to handle a certain traffic capacity and flow. To access Fort Heiman and the eligible battlefield core area properties from Fort Donelson, motorists would have to utilize these roads at a minimum.

The evaluation of existing roadway conditions focuses on capacity, which reflects the ability of the road network to serve the traffic demand and volume. The capacity of a roadway depends

mainly on the street width, number of lanes, intersection control, horizontal and vertical line-of-sight and other physical factors. Traffic volumes typically are reported, depending on the project

Table 3-8. Road Classifications in the Affected Areas of Calloway and Stewart Counties

Road	Road Classification						
	Rural Principal Arterial	Rural Minor Arterial	Rural Major Collector	Rural Minor Collector	Rural Local	Urban Collector	Urban Local
U.S. Highway 79/TN Rte. 76	X						
KY Rte. 121		X					
Kline Trail				X			
Cypress Trail				X			
Fort Heiman Rd.					X		
The Trace (LBL)			X				
Main Street						X	
Wynns Ferry Rd.					X		
Forge Road							X

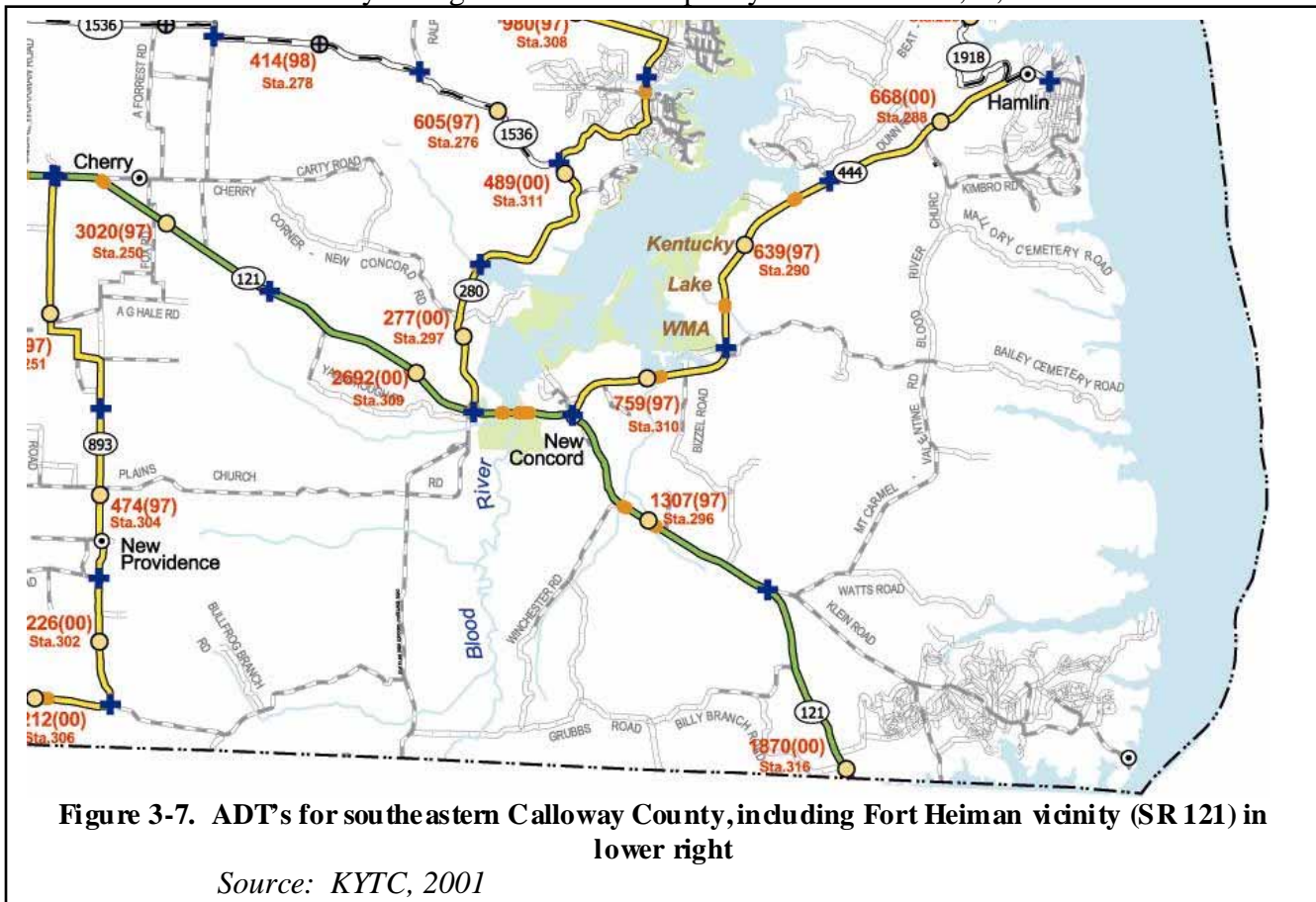
and database available, as the daily number of vehicular movements (e.g., passenger vehicles and trucks) in both directions on a segment of roadway, averaged over one full calendar year (average annual daily traffic (AADT)), or averaged over a period of less than a year (average daily traffic (ADT)). They can also be calculated for peak hour traffic. These values are useful indicators in determining the extent to which the roadway segment is used and in assessing the potential for congestion and other problems.

Both the Fort Heiman and battlefield core area sites are reached by driving on a State arterial road, and then turning onto County or Federal collector road or local roads. The Kentucky Transportation Cabinet (KYTC) and the Tennessee Department of Transportation (TDOT) maintain ADT counts on many of the County arterial and collector roads, as seen in Figures 3-7 and 3-8. The traffic counts are non-directional, meaning that all lanes of traffic are counted; that is, in the case of a two-lane road, both directions are added together to derive the ADT.

The most relevant ADT in Figure 3-7 is visible in the lower right of the map. The ADT for SR 121 in 2000 is 1870 vehicle trips. ADT's are not available for the collector and local roads leading to the Fort Heiman site from SR 121 in the extreme lower right (southeast) of the map, but they would be a good deal less than the 1870 for SR 121 itself, since these roads and others feed into the arterial.

Figure 3-8 shows a portion of Stewart County, Tennessee that includes Dover, Forts Donelson and Henry, and Land Between the Lakes NRA. The most relevant ADT on this map is the 4050 figure for Route 79-76 in the lower left, just south of Fort Henry (not designated on the map). This means that on average, 4050 vehicles pass this point each day headed east or west on 70-76 between Dover to the east and Kentucky Lake to the west.

The performance of a roadway segment and the level of congestion on a road are generally expressed in terms of the level of service (LOS) of the road. The LOS scale ranges from A to F, with each level defined by a range of volume to capacity ratios. LOS A, B, and C are considered



good operating conditions, where motorists experience minor to tolerable delays. LOS D represents below average conditions. LOS E corresponds to the maximum capacity of the roadway. LOS F represents a gridlock situation. Table 3-9 describes the LOS designations. These levels are based on the *Highway Capacity Manual* (TRB, 1994).

Table 3-9. Level of Service Descriptions	
LOS	Description
A	Free flow, with low volumes and high speeds, and with users unaffected by the presence of other users of the roadway.
B	Reasonably free flow, but presence of the users in traffic stream becomes noticeable, and speeds begin to be restricted by traffic conditions.
C	Stable flow, but operation of single users becomes affected by interactions with others in traffic stream (users are restricted in the freedom to select their own speeds).
D	High density, but stable flow; speed and freedom of movement are severely restricted; poor levels of comfort and convenience.
E	Unstable flow; operating conditions at capacity with reduced speeds, maneuvering difficulty, and extremely poor levels of comfort and convenience.

F Forced or breakdown flow with traffic demand exceeding capacity; unstable stop-and-go traffic.

Source: TRB, 1994

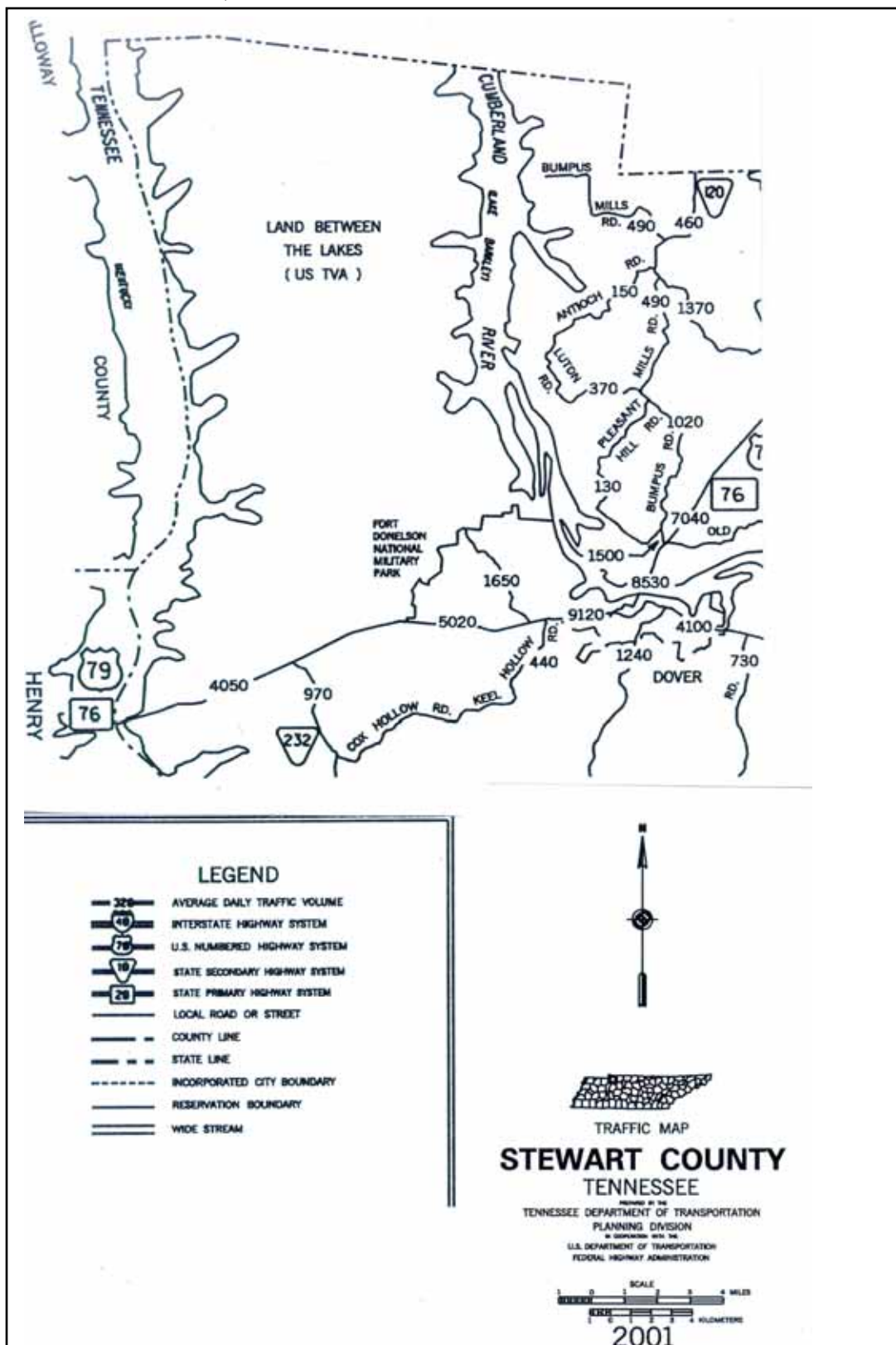


Figure 3-8. ADT's for a portion of Stewart County, including Dover, Forts Donelson and Henry, and Rte. 79-76 Source: TDOT, 2001

On all of the roads in the vicinity of both forts, there are few impediments to traffic flow (i.e., congestion). Traffic generally flows freely and unimpeded. Thus, depending on the time of day, these roads would operate at A or B, with occasional period of LOS C along SR 121 west of Fort Heiman in Calloway County.

3.6 LAND USE

Fort Heiman

Calloway County does not have a planning commission, land use plan or comprehensive zoning (Gordon, 2002). Land use in the vicinity of the fort site is low-density, rural residential with generally large lot sizes and modest to affluent single family dwellings. Due to its proximity to the recreational opportunities and amenities provided by Kentucky Lake, there is a good deal of real estate development occurring in this portion of Calloway County, aiming at retirees, second-home owners, and town dwellers who wish to move into the country. Forestry and agriculture are also present, and a large area just north of the “Federal Fort” property was clear-cut logged in 2002. All land in the area is privately-owned, except for Kentucky Lake itself, which is owned by the Tennessee Valley Authority (TVA). Most of Calloway County’s land area continues to be rural.

Fort Heiman itself is entirely privately owned.

Ten Eligible Battlefield Core Area Properties

All but one of the ten eligible properties within the core area of the Fort Donelson National Battlefield are privately owned. The exception is one property owned by the Civil War Preservation Trust, which purchased it with a view toward protecting its historic resources. Most of the properties are wooded open space, but some include overgrown fields and meadows. One property is a cleared city lot. Several houses have also been built on two of the properties. Each of the ten properties is located within or adjacent to the town of Dover, which is expanding steadily into these areas. New homes, apartments and other structures are being constructed and all of the eligible properties are under considerable “development pressure.” Except for several properties contiguous with the national battlefield, the eligible properties are bordered by other private lands, typically either other open space or low-density residential areas.

3.7 VISUAL RESOURCES

Nowadays in the United States, after millennia of human settlement and two centuries of industrialized civilization and development, the physical setting of most places is the product of both natural processes and human activities. Scenery results from the interaction of both natural

elements – including landforms, water, and vegetation – and human elements from society’s utilization of the land and its resources. These human elements include both structures like dams, power lines, bridges, and buildings and land uses like farm fields or forest clearcuts.

The two manmade reservoirs formed behind Kentucky Dam and Barkley Dam are a good example of natural phenomena and human enterprise combining to create a physical setting – and the aesthetic or scenic values associated with that setting. The hydrologic cycle, the river valleys, the rivers themselves, geologic or fluvial processes associated with the rivers, nearby geology, landforms, climate and vegetative communities all contribute to the physical setting and landscape. Similarly, the products of human enterprise, like the dams themselves, roads, power lines, buildings, and bridges are salient features in the landscape, some more than others because they are less screened by trees. The impounded water in the two reservoirs, and the visual appearance of the water surface, integrate both natural and artificial elements.

Fort Heiman is located in a distinctly rural setting while the ten eligible properties within the Fort Donelson battlefield core area are located in the semi-rural, urbanizing fringe of Dover. At Fort Heiman, the surrounding landscape is rolling and dominated by gentle hills and bluffs above Kentucky Lake. It is a rustic mixture of farmland, woodlots, and scattered residential development (houses, ancillary structures, and yards). The nearby presence of the large expanse of water comprising Kentucky Lake, surrounded by largely wooded bluffs and low hills, adds to the scenic quality of the area. Visual resources in the area are distinctly positive attributes. While they may not be outstanding in a national context, because the hills are not high enough, the forests not extensive enough, the countryside not wild enough and the air not clean enough, in a regional context they are indeed quite valuable and they are appreciated.

Fort Heiman’s lands are virtually entirely wooded with well-developed, second-growth forest. A closed forest canopy is present over most of the site. In some places the understory and undergrowth are dense as well and in other places they are less so. The features of historic value, principally earthworks and parapets, and even the Confederate Cemetery at Fort Henry, tend to be visible only at close range, both because they are usually less than ten feet high and are often hidden by trees growing on and around them. Two private homes, one already built and one under construction, are now visible from some of the Fort Heiman property. Lakeside bluffs at the edge of Fort Heiman offer views eastward of Kentucky Lake and its backdrop of low hills within Land Between the Lakes on the opposite side.

The properties within the battlefield core area near Fort Donelson are in or adjacent to a growing town. Most of the properties contain woodlands or old pastures that convey a pastoral or bucolic image, while two of the sites contain several houses and one or two sites are in more built-up portions of Dover. In general, the ten eligible properties have positive visual attributes, though they not as wild or natural as Fort Heiman. Nevertheless, their generally undeveloped, open-space condition is at least reminiscent of their character at the time they were a stage for important historic events in 141 years ago.

3.8 HUMAN HEALTH AND SAFETY

In Calloway County, the public/non-for-profit Murray Calloway County Hospital provides acute and long-term medical care for the region, including West Kentucky and Northwest Tennessee (MCCH, 2000). It has a total of 366 beds, of which 140 are for acute care and 226 for long-term care. Among the services it provides are:

- Ambulance
- Blood Bank
- Apheresis (platelet donation)
- Whole Blood
- Cardiac Rehab
- Cardiovascular
- Respiratory Care
- Vascular Lab
- Critical Care/Progressive Care
- Emergency
- Foundation
- Health and Wellness Center
- Health Express Mobile Screening Unit
- Hospice
- Laboratory
- Long Term Care
- Medical Records
- Medical/Surgical Inpatient Care
- Nutrition
- Obstetrics
- Pastoral Care
- Radiology

Stewart County has three community medical clinics with five doctors located throughout Dover (MTIDA, 2002). These are the Gateway Medical Clinic, LBL Medical Center and Stewart County Medical Center. Some of these are equipped with x-ray technology and have the ability to perform minor laser surgery and family medical care (Kentucky Lake Productions, 2002).

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 METHODOLOGY

The interdisciplinary study team (see Section 8, List of Preparers) followed a structured process to analyze the potential environmental impacts, or effects, resulting from the different management alternatives for those properties or resources that meet the criteria of national significance, suitability, and feasibility for inclusion into the national park system. This process, called the cause-effects-questions process, is described below.

Causes-Effects-Questions: A Structured Analytic Process

- Step 1:** Identify the specific activities, tasks, and subtasks involved in the proposed action(s) and alternative(s).
- Step 2:** For each specific activity, task, and subtask, determine the full range of direct effects that each could have on any environmental resource. For example, removing vegetation could cause soil erosion.
- Step 3:** For each conceivable direct effect, identify which further effects could be caused by the direct effects. For example, soil erosion could cause stream sedimentation, which could kill stream species, which could diminish the food supply for fish, leading to decreased fish populations. This inquiry can identify multi-stepped chains of potential causes-and-effects.
- Step 4:** Starting at the beginning of each chain of causes-and-effects, work through a series of questions for each potential effect:
- Would this effect actually occur from this project?
If not, why not? What would preclude it from happening?
 - If the effect cannot be ruled out, characterize which types of data, other information, and analyses are needed to determine the parameters of the effect, including its extent, duration, and intensity. Identify the sources from which the data is to be obtained.
- Step 5:** Gather the data and conduct the analyses identified by the above steps. Gather and use only relevant information. Focus on getting sound answers to the impact questions.
- Step 6:** Document the results of this study process. Provide all relevant analytic information, but no extraneous encyclopedia bulk.

Using this process, both direct and indirect effects that could potentially occur as a result of different management scenarios were identified. Direct effects are impacts caused by the alternative(s) at the same time and in the same location as the action. Indirect effects are impacts caused by the alternative(s) that occur later in time or farther in distance than the action.

The study team proceeded to conduct the investigation and analyses by gathering the data they concluded were relevant for each resource area. Using these data, the team determined which impacts would occur and assessed them according to their duration, extent, intensity, and whether or not the impact would cause an impairment of the park's resources. These parameters are defined below in general terms, and further elaborated upon in Table 15, in which more specific impact intensity thresholds are provided for each resource topic using recent NPS guidance.

4.1.1 Definitions

Duration of Impact:

Temporary – Impact would occur during the management transition phase only, or in the case of potential future developments, during the site preparation and construction phases only. Once these phases have ended, resource conditions are likely to return to pre-transition/construction conditions.

Short-term – Impact would extend past the management transition phase, or construction phase for future developments, but would not last more than a couple of years, at most.

Long-term – Impact would likely last more than a couple of years, or over the lifetime of the project.

Context of Impact:

Localized – Impacts would affect the resource area only on the project site or its immediate surroundings, and would not extend into the region.

Regional – Impacts would affect the resource area on a regional level, extending well past the immediate project site.

Intensity of Impact:

Negligible – The impact is at the lowest levels of detection – barely measurable and with no perceptible consequences.

Minor – Change in a resource area occurs, but no substantial resource impact results.

Moderate – Noticeable change in a resource occurs, but the integrity of the resource remains intact.

Major – Substantial impact or change in a resource area that is easily defined, noticeable, and measurable.

Table 4-1. Impact Threshold Definitions*

Impact Threshold Definition					
Impact Topic	Negligible	Minor	Moderate	Major	Duration
Soils and Topography	Soils would not be affected by erosion and surfacing or the effects to soils would be below or at the lower levels of detection. Any effects to soil productivity or fertility from erosion and surfacing with impermeable materials would be slight and no long-term effects to soils would occur. Changes to topography would be scarcely noticeable even to the trained observer.	The effects to soils from erosion would be detectable, such as with gullies and sheet erosion. Effects to soil productivity or fertility from erosion or surfacing would be small, as would the area affected. If mitigation were needed to offset adverse effects, it would be relatively simple to implement and would likely be successful. Changes to topography would be detectable to the trained observer and could include changes to steepness, aspect and shape of slopes and changes to elevation from minor grading.	The effect on soil productivity or fertility from erosion or surfacing with impermeable materials would be readily apparent, likely long-term, and result in a change to the soil character over a relatively wide area. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful. Changes to topography would be readily apparent to the casual observer and may require mitigation in the form of landscaping or compensatory grading in order to blend in with surrounding landforms.	The effect on soil productivity or fertility from erosion or surfacing with impermeable materials would be readily apparent, long-term, and substantially change the character of the soils over a large area in and out of the site. Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed. Changes to topography would be highly evident and incongruous in the surrounding landscape, and compensatory grading could not guarantee resemblance to the topography of surrounding landforms	Short-term - Recovers in less than three years Long-term - Takes more than three years to recover
Water Resources (quality and hydrology)	Neither water quality nor hydrology would be affected, or changes would be either non-detectable or if detected, would have effects that would be considered slight, local, and short-term.	Changes in water quality or hydrology would be measurable, although the changes would be small, would likely be short-term, and the effects would be localized. No mitigation measure associated with water quality or hydrology would be necessary.	Changes in water quality or hydrology would be measurable and long-term but would be relatively local. Mitigation measures associated with water quality or hydrology would be necessary and the measures would likely succeed.	Changes in water quality or hydrology would be readily measurable, would have substantial consequences, and would be noticed on a regional scale. Mitigation measures would be necessary and their success would not be guaranteed.	Short-term - Following action, recovery will take less than one year Long-term - Following action, recovery will take longer than one year

Table 4-1. Impact Threshold Definitions*

Impact Threshold Definition					
Impact Topic	Negligible	Minor	Moderate	Major	Duration
Air Quality	Emissions of criteria pollutants would cause no detectable change to ambient air conditions. Smoke and emissions would not be perceptible by trained observers. Area stays in attainment.	Emissions and smoke would be detectable by instruments and trained observers in the immediate vicinity. There would be no change to regional ambient air quality.	Emissions degrade air quality in the local area and/or the region in a sustained manner. Ambient air quality in the region is detectably degraded but not enough to change attainment status.	Emissions degrade regional air quality to an extent that the area is moved from attainment to non-attainment for one or more criteria pollutants. Mitigation is necessary.	Short-term – Degraded air quality lasts less than one year Long-term – Degraded air quality lasts more than one year
Vegetation	No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be short-term, on a small scale, and no species of special concern would be affected.	The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective.	The alternative would affect some individual native plants and would also affect a sizeable segment of the species' population in the long-term and over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful. Some species of special concern could also be affected.	The alternative would have a considerable long-term effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the site. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.	Short-term - Recovers in less than three years Long-term - Takes more than three years to recover
Wildlife	Wildlife would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the wildlife species' population.	Effects to wildlife would be detectable, although the effects would be localized, and would be small and of little consequence to the species' population. Mitigation measures, if needed to offset adverse effects, would be simple and successful.	Effects to wildlife would be readily detectable, long-term and localized, with consequences at the population level. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.	Effects to wildlife would be obvious, long-term, and would have substantial consequences to wildlife populations in the region. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.	Short-term - Recovers in less than one year Long-term - Takes more than one year to recover

Table 4-1. Impact Threshold Definitions*

Impact Threshold Definition					
Impact Topic	Negligible	Minor	Moderate	Major	Duration
Endangered or threatened species and critical habitats	No federally listed species would be affected or the alternative would affect an individual of a listed species or its critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population. Negligible effect would equate with a "no effect" determination in U.S. Fish and Wildlife Service terms.	The alternative would affect an individual(s) of a federally listed species or its critical habitat, but the change would be small. Minor effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.	An individual or population of a federally listed species, or its critical habitat would be noticeably affected. The effect could have some long-term consequences to the individual, population, or habitat. Moderate effect would equate with a "may affect" determination in U.S. Fish and Wildlife Service terms and would be accompanied by a statement of "likely..." or "not likely to adversely affect" the species.	An individual or population of a federally listed species, or its critical habitat, would be noticeably affected, with long-term, vital consequences to the individual, population, or habitat. Major effect would equate with a U.S. Fish and Wildlife Service determination of "may affect, but not likely to adversely affect" or, "is likely to adversely affect" the species or its critical habitat.	Short-term – Population or critical habitat recovers in less than one year Long-term – Population or critical habitat takes more than one year to recover
Cultural Resources	Impact is at the lowest levels of detection - barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination of effect would be <i>no adverse effect</i> .	Adverse impact - disturbance of a site(s) results in little, if any, loss of significance or integrity and the National Register eligibility of the site(s) is unaffected. For purposes of Section 106, the determination of effect would be <i>no adverse effect</i> . Beneficial impact – maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be <i>no adverse effect</i> .	Adverse impact - disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> . Beneficial impact – stabilization of a site(s). For purposes of Section 106, the determination of effect would be <i>no adverse effect</i> .	Adverse impact – disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> . Beneficial impact – active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be <i>no adverse effect</i> .	Short-term – Impact persists less than three years Long-term – Impact persists more than three years

Table 4-1. Impact Threshold Definitions*

Impact Threshold Definition					
Impact Topic	Negligible	Minor	Moderate	Major	Duration
Visitor use and experience	Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.	Changes in visitor use and/or experience would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.	Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.	Changes in visitor use and/or experience would be readily apparent and have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.	Short-term - occurs only during the proposed action and up to one year afterwards Long-term - occurs after the proposed action and indefinitely into the future
Socioeconomic environment (including population, economy, social conditions, utilities & public services)	No effects would occur or the effects to socioeconomic conditions would be below or at the level of detection. The effect would be slight and no long-term effects to socioeconomic conditions would occur.	The effects to socioeconomic conditions would be detectable, although short-term. Any effects would be small and if mitigation were needed to offset potential adverse effects, it would be simple and successful.	The effects to socioeconomic conditions would be readily apparent and likely long-term. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.	The effects to socioeconomic conditions would be readily apparent, long-term, and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.	Short-term - Effects last one year or less Long-term - Effects last longer than one year
Transportation	No impacts on transportation systems or traffic would occur at all or the effects would be below or at the level of detection. The impact would be slight and no long-term impact to transportation or traffic would occur.	The impacts on transportation systems and traffic conditions would be detectable, although short-term. Any impacts would be small and if mitigation were needed to offset potential adverse effects, it would be simple and successful.	The impacts on transportation systems and traffic conditions would be readily apparent and likely long-term. Any impacts would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.	The impacts on transportation systems and traffic conditions would be readily apparent, long-term, and would cause substantial changes to transportation and/or traffic in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.	Short-term - Impacts last one year or less Long-term - Impacts last longer than one year

Table 4-1. Impact Threshold Definitions*

Impact Threshold Definition					
Impact Topic	Negligible	Minor	Moderate	Major	Duration
Land Use	No effects would occur on land use or the effects would be below or at the level of detection. The effects would be slight and no long-term effects on land use would occur.	The effects on land use would be detectable, although short-term. Any effects would be small and if mitigation were needed to offset potential adverse effects, it would be simple and successful.	The effects on land use would be readily apparent and likely long-term. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.	The effects on land use would be readily apparent, long-term, and would cause substantial changes to land use in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.	Short-term – Effects last one year or less Long-term – Effects last longer than one year
Visual Resources	The change to the visual appearance of the site would generally be overlooked and not noticeable	The change to the visual appearance of the site would generally be noticeable but subtle. It would usually be subordinate, but would be noticed by most without being pointed out. Any mitigation to offset adverse effects would be simple and successful.	The change to the visual appearance of the site would be distracting. It would be visually co-dominant; the change would compete strongly for attention and would be equally conspicuous with other features. If mitigation were needed or possible, it could be extensive but would likely be successful.	The change to the visual appearance of the site would be dominant and would demand attention. The change to the landscape is the focus of attention and would become the primary focus of the viewer. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.	Short-term – Change lasts one year or less Long-term – Change lasts longer than one year
Human health and safety	Human health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on the human health or safety.	The effect would be detectable and would likely be short-term, but would not have an appreciable effect on human health and safety. If mitigation were needed, it would be relatively simple and would likely be successful.	The effects would be readily apparent and long-term, and would result in substantial, noticeable effects to human health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.	The effects would be readily apparent and long-term, and would result in substantial, noticeable effects to human health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed.	Short-term – Effects last one year or less Long-term – Effects last longer than one year

* *Threshold definitions adopted and modified from NPS-DSC (2002), NPS-ISO (2002), and GLAC (2000).*

4.1.2 Impairment of Park Resources

The study team analyzed whether impacts would result in an impairment of park resources based on guidelines set forth in NPS Management Policies. Impairment occurs when an impact degrades or harms the integrity of park resources or values, including opportunities that would otherwise normally be available for the enjoyment of those resources or values had the impact not occurred. Under the NPS Organic Act and the General Authorities Act, impairment of park resources is prohibited. Whether an impact constitutes an impairment depends on the particular resource and values that would be affected; the impact's severity, duration, and timing; the direct and indirect effects of the impact; and the cumulative effect of the impact when added to other impacts (NPS, 2001).

The present proposed action involves lands and resources other than those belonging to Fort Donelson National Battlefield. It should be stressed that the prohibition on impairment applies only to national park system units (i.e. Fort Donelson in this case), not non-NPS lands (Fort Heiman and the ten eligible battlefield core area properties). Actions occurring outside park boundaries may sometimes cause impairment of park resources, but this would not represent a violation of the Organic Act, unless the NPS were in some way responsible for the action.

NPS Management Policies outline the conditions under which an impact would be likely to result in an impairment of park resources. According to the Policies, an impact would likely create an impairment to the extent that the conservation of the affected resource or value is: 1) essential to fulfill a purpose established in the enabling legislation or proclamation of the park; 2) key to the integrity (natural or cultural) of the park or its opportunities, or 3) identified as a goal in the general management plan for the park. If an impact is an unavoidable result of an action required to maintain or restore the integrity of park resources or values, and cannot be reasonably mitigated, the impact would be less likely to constitute an impairment of park resources.

4.1.3 Connected Actions and Cumulative Impacts

Connected Actions

According to the NPS DO-12 handbook, connected actions are actions that are closely related to the proposed action or its alternatives. Connected actions 1) automatically cause other actions, 2) could not or would not proceed unless other actions have previously been taken or occur simultaneously, or 3) are interdependent parts of a larger action. Although no specific connected actions have been identified for this BAS & EA, if the boundaries of Fort Donelson National Battlefield are extended beyond those at present (i.e., selection of Alternative B), it is likely that the NPS would undertake some development, however low-key, at either Fort Heiman or the eligible battlefield core area properties or both to enhance visitor use and experience. While no site-specific development plans have been determined, such developments could include: improving access to the sites; construction of parking areas for cars, buses, and recreational vehicles (RVs); developing trails around the sites; installing interpretive wayside markers; and providing informational pamphlets that describe the historic events.

In order for this BAS& EA to serve also as a planning document, the analysis of potential environmental and socioeconomic impacts that may result from the different management alternatives is supplemented by a general description of potential impacts that could result from NPS developments to enhance visitor experience (under Alternative B only). These potential impacts are discussed by resource area as potential connected actions, and are included in the discussion of cumulative impacts.

Since these developments are not part of the scope of this BAS & EA or the decision to be made regarding the boundaries of FODO and subsequent land management, the potential impacts that could result from these developments do not affect the ratings or comparison of management alternatives presented in this BAS & EA, or the selection of the environmentally preferred alternative, discussed in Section 2.4. Once a management alternative is selected and plans for development are more fully refined, additional NEPA documentation will be prepared by the NPS to analyze the impacts resulting from any future developments on either Fort Heiman or the battlefield core area properties. The description of the potential impacts from future developments presented in this BAS & EA should serve as a planning tool to define the scope of the impacts analysis in subsequent NEPA documentation.

Cumulative Impacts

A cumulative impact is an impact on the natural or human environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency, organization, or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts can result from individually minor and insignificant, but collectively significant actions, taking place over a period of time.

Cumulative impacts were assessed by combining the potential environmental impacts of the alternatives with the potential impacts of known projects or actions that have occurred, that are now occurring, or that are projected to occur within the region encompassing Fort Heiman, Fort Henry and Fort Donelson.

In the region as a whole, efforts are underway to protect Civil War-era historic resources that have a bearing on the proposed action. The Vicksburg Campaign Trail, Public Law 106-487, passed in November 2000, authorized the NPS to conduct a feasibility study on the preservation of Civil War battlefields along the Vicksburg Campaign Trail. The purpose of this feasibility study, now in process, is to examine and evaluate a number of sites in Arkansas, Louisiana, Mississippi, and Tennessee associated with the Civil War events of the Vicksburg Campaign. (A “technical correction” being introduced in Congress seeks to add Kentucky to the list of states with sites eligible for inclusion in the Campaign Trail.) The feasibility study will also recommend how best to preserve the historic value and character of these Civil War resources. Forts Donelson, Heiman, and Henry are three of the more important sites of the hundreds under consideration. The ultimate aim of PL 106-487 is to preserve as many of the historic resources and sites associated with the crucial Vicksburg Campaign, and link them in a form of multi-state trail or heritage corridor.

The State of Tennessee has been undertaking efforts to inform and educate the public about important Civil War sites in the state, and has designated the Civil War Heritage Trail to commemorate more than 60 Civil War-related sites (Moore, 2001). These efforts are part of a larger initiative called the Civil War Discovery Trail, being carried out by the Civil War Preservation Trust, with the support of the National Trust for Historic Preservation, the National Park Service, state agencies and local communities around the nation. The Discovery Trail links more than 500 sites in 28 states with the goal of educating Americans on the enduring impact of the Civil War on American society (CWPT, 2001).

Calloway County and its county seat Murray are undertaking a joint initiative to foster economic growth (MCCCC, 2002). The county suffered a major economic setback recently when one of the area's largest employers, Mattel, announced that it would close its Murray toy manufacturing and distribution plant by 2002, sending nearly 1,000 jobs to Mexico (Walker, 2001). The county is actively courting new sources of employment. The outcome of these efforts will affect both development pressures around Fort Heiman as well as the interest in preserving the site.

In the immediate vicinity of Fort Heiman, substantial real estate development is taking place, primarily of the kind of low-density, semi-rural residential development cited earlier (Figures 4-1 and 4-2). In most cases, it appears that homes are built on individual lots one at a time rather than entire subdivisions all at once. Nevertheless, over time, development pressure to accommodate the growing residential population of the area is increasing steadily. The same development pressures exist at the ten eligible battlefield core area properties in the vicinity of Fort Donelson. These parcels are all located in and around Dover, which is growing steadily.



Figure 4-1. Real estate signs near Fort Heiman



Figure 4-2. Real estate sign on Fort Heiman

Fort Henry, because it is located on LBL, faces no such development pressures. However, Stewart County as a whole is growing and developing at a robust pace. The county has a number of planning initiatives to manage and accommodate this growth (Wallace, 2002). The Rivers at War Trail now in the planning and development stages will connect Dover to Paris Landing State Park, passing right by Fort Henry. It will attract more bicyclists and hikers to the fort site.

4.2 ALTERNATIVE A: NO ACTION

Under the No Action Alternative, no additions would be made to Fort Donelson National Battlefield. Fort Heiman would remain in private ownership, as would the battlefield core area properties, under the protection of existing land-use controls and existing historic preservation policies, unless another organization interested in protection and interpretation of its resources came forward. Fort Henry would remain protected by the U.S. Forest Service.

4.2.1 Natural Resources

Soils and Topography

Existing soil conditions and topographic characteristics of both Fort Heiman and the battlefield core area properties would largely continue under this alternative. Areas currently experiencing soil erosion would continue to erode. At Fort Heiman, as a result of ground disturbance from ongoing residential construction that would likely continue at some rate, there would be somewhat greater, temporary to short-term, localized erosion of minor intensity. Elsewhere on the fort site, erosion would be minimal and kept to low background rates, which are acceptable as long as the canopy, shrub and duff layers are maintained. Over long periods of time, i.e. decades to centuries, the relief of the earthworks and parapets would gradually diminish. At the ten eligible battlefield core area properties, soils and topography would largely remain the same until and unless construction and development occur on these sites, in which case somewhat greater, temporary to short-term, localized erosion and changes to site topography of minor intensity would occur. Once a given site has been developed and conditions stabilized, erosion rates would diminish substantially. Fort Henry would not be impacted by this alternative, due to ongoing USFWS management and protection. No direct impacts on soils or topography from NPS actions or activities would be anticipated as a result of implementing Alternative A.

Water Resources

Existing conditions of surface water and groundwater quantity and quality would largely continue under this alternative. The exception is that at Fort Heiman, if further home construction occurs, there would likely be temporary to short-term, localized, negligible to minor impacts from runoff, erosion, turbidity, suspended solids and sedimentation. Since there are no permanent streams on-site, exposed sediments could conceivably be transported during storms to Kentucky Lake, forming small plumes of turbidity at the point(s) of entry. Similar short-term and localized impacts could occur to streams and water bodies on or near the battlefield core area properties were they to be developed, but as mentioned in Section 3, only one intermittent stream (Lick Creek) appears to cross one of the sites (Cherry property). Therefore, impacts would likely be negligible to at most minor. At Fort Henry, no impacts to water resources would occur from ongoing USFS management of the site.

Air Quality

Current management of the properties does not involve any activities that would impact the air quality of the area to any substantial extent. If residential construction at Fort Heiman continues, or if construction and development were to occur at the battlefield core area properties, there would be some emissions with negligible to minor impacts on air quality from fugitive dust and vehicle emissions during construction. Over the long term, possible increases in residential, wood-burning fireplaces and stoves, and modest increases in local automobile traffic would also emit pollutants to the air, but overall, few additional sources of emissions would be created as a result of this alternative. Current air quality conditions and patterns in the region would continue.

Vegetation and Wildlife

No change in management would occur under Alternative A, and current management practices would continue. At Fort Heiman, if private development of lots continues, some vegetation would be removed to make way for homes, driveways, and lawns, leading to habitat fragmentation that would likely have long-term, minor adverse impacts on area wildlife. Development of the ten eligible battlefield core area properties would also lead to some loss and fragmentation of vegetation communities and habitat, to the likely detriment of local wildlife populations. In the regional context, however, these adverse impacts, while long term, are only negligible to minor in intensity. There would be no impacts at Fort Henry.

Threatened and Endangered Species

No federally listed threatened or endangered species are likely to be adversely affected from this alternative at Fort Heiman and the battlefield core area properties, although changes to Fort Heiman's existing habitat might make it less attractive to foraging gray bats, whose presence is documented in Calloway County but not confirmed on-site. If Fort Heiman had more homes constructed on it (which is likely to happen under Alternative A), and the battlefield core area properties were to be fully converted from their present largely open space condition to a more urbanized or developed condition, impacts on federally listed species are unlikely, or minimal if they do occur, because the species in question (those documented in the two counties) tend to have different habitat preferences or requirements. However, some state-listed species of both plants and animals, which are much more numerous than federally-listed species in Calloway and Stewart counties, could potentially be affected. At Fort Henry, no direct or indirect impacts on these resources would occur as a result of implementation of Alternative A.

4.2.1.1 Connected Actions and Cumulative Impacts

Under Alternative A, at Fort Heiman and the battlefield core area properties, there would be no connected impacts, but there would be cumulative impacts to natural resources from continuing home construction at the site in conjunction with ongoing residential development in the surrounding area. These impacts would be long-term, localized, minor, and adverse. At Fort Henry, there would be no adverse cumulative impacts from such development.

Heritage tourism and outdoor recreation developments occurring in the region would not change visitation to Fort Heiman and the battlefield core area properties under this alternative, because they would likely remain in private hands and inaccessible to visitors. These same developments and trends may result in a modest increase in visitation to Fort Henry under Alternative A, through increased promotion and marketing efforts. Increased visitation to Fort Henry could adversely impact natural resources at the site over the long-term, including increased trampling of vegetation, increased soil compaction, and increased levels of erosion, if no measures are taken to avoid or minimize such impacts. The USFS and LBL would work to avoid and mitigate any such impacts. Therefore, implementation of Alternative A may result in a localized, minor, long-term, adverse cumulative impact on natural resources.

4.2.1.2 Conclusion

Under Alternative A, the No Action Alternative, there would be no direct or indirect impacts on natural resources at Fort Henry, but there would likely be temporary to long-term, localized, negligible to minor impacts at Fort Heiman and the battlefield core area properties. Moreover, additional adverse cumulative impacts on these resources may result over the long-term from increased private development at Fort Heiman and Fort Donelson and increased visitation at Fort Henry due to promotional efforts of the NPS and USFS. These cumulative impacts would generally be localized and minor in intensity. Certain benefits to natural resources from NPS management at Fort Heiman would not occur under this alternative.

4.2.2 Cultural Resources

No change in management would occur under Alternative A: the USFS would continue managing the Fort Henry site using current management practices, and Fort Heiman and the ten eligible battlefield core area properties would remain under their current management and private ownership. The NPS would not have the authority to restrict or prohibit development at Fort Heiman or the FODO battlefield core area properties, or to enforce certain management practices at those sites. Existing federal, state and local laws and regulations would also not substantially restrict development on these private properties, in spite of the presence of significant historic resources. Those historic resources currently experiencing erosion or adverse impacts from human activities at Fort Heiman would continue to be degraded under this alternative.

Implementation of Alternative A may possibly impact some cultural resources directly in the short-term, depending on the pace of development on the various privately owned lots at Fort Heiman. Over the long term however, adverse impacts on these resources are a virtual certainty, since the Fort Heiman property has long been subdivided and home construction just recently begun. Moreover, long term development of many, most or all of the ten eligible battlefield core area properties near Fort Donelson is a virtual certainty, due to their close proximity to the growing town of Dover, and development pressures already much in evidence. These impacts could be moderate to major in intensity, depending on the specific pattern and density of development at Fort Heiman and the core area properties. Even if particular earthworks are not disturbed by development, the ambience, character, and integrity of the historic fort and battle-

grounds would be seriously compromised if development proceeds and most lots are built upon. Furthermore, the high archeological potential of both the Fort Heiman and eligible Fort Donelson properties would be seriously compromised.

4.2.2.1 Connected Actions and Cumulative Impacts

At both Fort Heiman and the ten eligible Fort Donelson properties, there are unlikely to be additional adverse impacts under Alternative A due to connected actions and cumulative effects. The damage to cultural and historic resources would be from direct and indirect impacts.

Under Alternative A, current landowners of the privately-owned Fort Heiman and Fort Donelson properties being considered for addition to FODO would maintain ownership and management of their properties. These landowners would not be prohibited from developing their lands, although it would be unlikely that they would undertake any activities that would intentionally damage the historic resources on their properties. NPS outreach, cooperation and partnership with these owners would also help to protect against development. However, no assurance is granted under this alternative that developments, which could potentially damage cultural resources, would not occur at Fort Heiman sites.

Heritage tourism and outdoor recreation developments occurring in the region would not change visitation to Fort Heiman or the eligible Fort Donelson properties under this alternative, because they would likely remain in private hands and not accessible to visitors. These same developments and trends may result in a modest increase in visitation to Fort Henry under Alternative A, through increased promotion and marketing efforts. Increased visitation to Fort Henry could increase the potential for human impacts, such as vandalism or looting, on the site's cultural resources, particularly the Confederate cemetery. The USFS and LBL would work to avoid and mitigate any such impacts. Generally, however, somewhat increased visitation is unlikely to adversely affect Fort Henry's cultural resources, and would lead overall to greater awareness and appreciation of their significance in the nation's history and even greater public will to protect and preserve them.

Under this alternative, neither constant monitoring of the resources nor an increased presence of law enforcement on any of the sites would occur. This could result in a long-term, localized, moderate to major, adverse impact on cultural resources. While NPS partnerships with property owners could lead to measures designed to prevent or mitigate such impacts, no mechanism would be in place to ensure enforcement of those measures.

4.2.2.2 Conclusion

Under Alternative A, the NPS would not have the authority to restrict or prohibit private development at Fort Heiman or the ten eligible battlefield core area properties at Fort Donelson, or to enforce certain management practices on those properties. Implementation of Alternative A may or may not directly impact most cultural resources in the short-term, but adverse impacts on the setting, context and character of these resources would definitely occur over the long-term. These impacts could be moderate to major in intensity, depending on the specific pattern and density of development, as well as the willingness of landowners to cooperate in the preservation

of earthworks. At Fort Henry, these direct and indirect effects would be avoided due to its management and protection by the USFS. Increased visitation to Fort Henry resulting from promotional efforts could increase the potential for human impacts on these resources, without adequate protections, but the USFS and LBL would work to avoid and mitigate these. Exposing more members of the public to Fort Henry would raise awareness and appreciation of its role in the Fort Donelson battle, the Vicksburg Campaign, the Civil War in general, and the nation's history.

4.2.3 Visitor Use and Experience

Under Alternative A, the No Action Alternative, there would be no change in the management of Fort Heiman, Fort Henry and the ten eligible battlefield core area properties. The USFS manages the Fort Henry, and the other sites under consideration for inclusion into the national park system, Fort Heiman and the battlefield properties, would remain under private ownership and management, as at present. No change in current management practices would occur, allowing for gradual development of houses and other structures on the private parcels that cover these sites. Implementation of this alternative would have a negligible adverse impact on the minimal visitor use and experience that now occurs at Fort Heiman and the FODO battlefield core area properties, and have only a minimal impact (beneficial) at Fort Henry. Current visitor use patterns would largely continue, as would existing visitor experience at both sites.

At Fort Donelson, visitor use and experience would not be substantially changed by this alternative, since Forts Heiman and Henry and the ten eligible properties are not now part of the park, are removed from it, and are not heavily emphasized in the park's interpretive and educational efforts and exhibits. There would probably be a minor adverse, long-term effect on the experience of visitors who would lose the opportunity to visit Fort Heiman, see the battlefield core area properties, and who may feel disappointment at learning that they had been developed and their character irrevocably and permanently altered.

4.2.3.1 Connected Actions and Cumulative Impacts

Since Alternative A would have negligible to minor adverse impacts on visitor use and experience in the region, this alternative would not contribute to cumulative impacts, either positive or negative, on visitor use and experience. There are, however, other projects and activities occurring in the region that would enhance and expand visitor use and experience. As discussed in Section 4.1.3 of this BAS & EA, there are active preservation efforts occurring in the region to preserve Civil War sites and promote heritage tourism. This synergy between sites would not be exploited under Alternative A.

4.2.3.2 Conclusion

At Fort Heiman as well as the ten eligible battlefield core area properties near FODO, negligible levels of visitor use are likely to persist or even decline as these properties are gradually developed; this would result in a minor, long-term adverse effect on visitor use and experience. At Fort Henry, no adverse impacts on current relatively low levels of visitor use patterns, or

visitor experience in the area are anticipated; there may be slight increases in visitation and the quality of experience as a result of greater cooperation between the USFS and the NPS to promote and interpret the site. Visitor use and experience at Fort Donelson National Battlefield itself may be adversely affected, but to a negligible or at most minor degree, with the probable, eventual loss of Fort Heiman and the battlefield core area properties to residential and other development.

4.2.4 Socioeconomic Environment

Population, Economy, and Social Conditions

Under Alternative A, the No Action Alternative, there would be no change in the ownership or management of Fort Heiman, Fort Henry, and the eligible battlefield core area properties. No change in current management practices would occur; current practices would continue. No impacts on the regional population or economy are anticipated to result from Alternative A, but the local population would likely increase as the Fort Heiman site and the battlefield core area properties are developed over time into low-density residential areas or other even more urban land uses. Existing county-level trends in population growth, employment, income and poverty levels, and other socioeconomic parameters are anticipated to continue in their current patterns, for both Calloway and Stewart counties.

The local community and government, and more widely, the nation's Civil War community, strongly support NPS ownership, management, and protection of Fort Heiman and the other eligible properties by including them in Fort Donelson National Battlefield. Thus, implementation of Alternative A may result in community dissatisfaction, since additional protection of important historic resources that would be offered by the NPS management would not occur. Although the community may not support implementation of Alternative A, other potentially adverse social impacts associated with increased visitation to Fort Heiman and the other sites, including trespassing in nearby residential areas, would not occur under this alternative. On the other hand, under this alternative, there could be a greater incidence of trespassing from Civil War buffs seeking out the surviving earthworks at the Fort Heiman site or artifacts at the battlefield core area properties as they become built up with private homes and/or other development.

In summary, Alternative A would result in both adverse and beneficial socioeconomic impacts, which on balance, would probably be of a short-term to long-term, net minor adverse character.

Utilities and Public Services

Under Alternative A, no change in the ownership or management of any of the properties would occur. At Fort Heiman and the ten battlefield core area properties, a probable increase in the number of residences and/or other buildings would mean an expansion of electrical and telephone lines and possibly other utilities in the immediate vicinity. But the numbers are so modest that this would not lead to a large increase in demand for local utility providers. Likewise, new residences at Fort Heiman and the Fort Donelson core area properties would

result in a very modest long-term increase in the demand for public services like police and fire protection in the area, but overall impacts would be negligible. At Fort Henry, there would be virtually no impact on utilities and public services either locally or within Stewart County from this alternative.

4.2.4.1 Connected Actions and Cumulative Impacts

Other projects, activities, and demographic and economic trends are occurring or are projected to occur in the counties and the overall region that might affect the socioeconomic environment. However, Alternative A would not contribute appreciably to either adverse or beneficial direct or indirect impacts on the region's socioeconomic environment. Therefore, implementation of Alternative A would not contribute substantially to cumulative socioeconomic impacts in Calloway and Stewart counties.

4.2.4.2 Conclusion

Alternative A would result in few adverse or beneficial direct or indirect impacts on the population, economy, and utilities and public services in and around Forts Heiman, Henry, Donelson and their respective counties. There would likely be a long-term, negligible to minor increase in demand for utilities and public services in Calloway and Stewart counties due to more development at Fort Heiman and the ten battlefield core area properties.

The local and regional community is not in support of Alternative A. Indeed, strong grassroots community support for other alternatives has encouraged state and federal officials to vigorously pursue them. Thus, a short-term to potentially long-term, moderate, regional, adverse social impact would probably result from implementation of Alternative A, due to the community strongly supporting protection of Fort Heiman and the eligible battlefield core area properties by the National Park Service and their inclusion in the Fort Donelson National Battlefield.

4.2.5 Transportation

Under Alternative A, the No Action Alternative, no change in ownership or management would occur at Fort Heiman, Fort Henry, or the Fort Donelson battlefield core area properties. Implementation of Alternative A would not change the level of congestion or traffic in the affected area. Existing traffic patterns and road conditions would continue. Over the long term, there is projected to be a negligible increase in traffic on roads accessing the Fort Heiman site, as a result of an increasing number of homes or vacation homes there. Similarly, development of the battlefield core area properties with homes or other commercial or institutional structures would cause perhaps a minor increase in traffic on the various roads in the vicinity of these sites on the outskirts of Dover.

4.2.5.1 Connected Actions and Cumulative Impacts

Other transportation projects and trends are occurring or are projected to occur in the counties and the overall region that might affect the transportation system and traffic. However,

Alternative A would not contribute appreciably to either adverse or beneficial direct or indirect impacts on the region's transportation system or traffic. Therefore, implementation of Alternative A would not contribute substantially to cumulative transportation impacts in Calloway and Stewart counties.

4.2.5.2 Conclusion

Alternative A would have negligible impacts on transportation and traffic overall. It would not contribute significantly to cumulative impacts in the area.

4.2.6 Land Use

Under Alternative A, Fort Heiman and the ten eligible battlefield core area properties would remain in private ownership. The Fort Heiman site, which has been subdivided and now consists of one large parcel and more than 20 lots, would probably continue to be developed over time with private homes and houses, as has already begun to occur. While it is largely private, unpopulated forestland at present, in the future, under the No Action Alternative, it would retain its largely wooded character, but contain a number of structures, houses, and full-time and part-time residents. These changes are not incompatible with surrounding land uses, present and future. Surrounding land uses are likely to retain their rural character, with agriculture, private woodlots, and residences and second homes or cottages predominating, although over time, the area will become more populous and developed. Development of the Fort Heiman site that would in all likelihood continue to take place under this alternative would neither retard nor accelerate this process in the surrounding area.

Under Alternative A, the undeveloped portions of the ten eligible battlefield core area properties would probably transition from open space to relatively low-density residential or commercial development within Dover and on its outskirts. These land use changes would correspond to the land uses trends now occurring in the area.

At Fort Henry, there would be no change to land use from Alternative A.

4.2.6.1 Connected Actions and Cumulative Impacts

The principal cumulative impacts relate to ongoing population growth in Calloway County and Stewart County, which are gradually converting lands from rural, agricultural and forestry land uses toward rural residential land use. Alternative A would contribute to this long-term trend.

4.2.6.2 Conclusion

Under Alternative A, Fort Heiman and the eligible Fort Donelson battlefield core area properties would remain in private hands. Over time, Alternative A would likely lead to the construction of private homes on the Fort Heiman tracts and the eligible core area properties, a process which has already begun. These developments would parallel what is happening elsewhere in the area.

4.2.7 Visual Resources

Under Alternative A, the No Action alternative, no change in ownership or management of any of the properties would occur, and at Fort Henry, existing conditions and management practices on the site would continue. The visual quality of the area would continue in its current condition under this alternative, and existing features would remain in the area. No direct or indirect impacts on visual resources are expected to result from implementation of Alternative A at Fort Henry.

In contrast, at Fort Heiman and the ten eligible properties near Fort Donelson, there would be changes to the visual resources of the sites and the overall character of the landscape as a result of the tree clearing and grading that would take place on various lots to make way for construction of homes. At Fort Heiman, some of the homes may remove trees to obtain vistas of Kentucky Lake, which would not only change views of the lake from the site, which are now largely inhibited by tree cover, but also views of the site from the lake. If this clearing is done in a careful or tasteful manner, the impacts to visual resources would be fairly small. Overall, both at Fort Heiman and the ten eligible battlefield core area properties, impacts to visual resources from Alternative A would be long-term, localized and minor.

4.2.7.1 Connected Actions and Cumulative Impacts

Past, present and future timbering operations on nearby properties affect the visual environment. But the principal cumulative impacts to visual resources relate to ongoing population growth in Calloway and Stewart counties, which is gradually converting lands from rural, agricultural and forestry land uses toward rural residential land use. Alternative A would contribute to this long-term trend. There is likely to be a minor, long-term degradation of scenic values in the area as it homes and other structures grow in number and visual prominence.

4.2.7.2 Conclusion

Impacts to visual resources from the No Action Alternative would be long-term, localized and minor. This alternative would contribute to cumulative impacts on visual resources in Calloway and Stewart counties.

4.2.8 Human Health and Safety

Under Alternative A, no activities would occur, and no additional risks would be created, that would threaten the health or safety of the public. Traffic volumes would not change substantially at any of the sites, so that there would be no change to the level of risk from vehicular accidents on nearby roadways. Visitors to Fort Henry would continue to rely on LBL staff and local community emergency medical services in the event of an accident/injury or sickness while visiting the site.

4.2.8.1 Connected Actions and Cumulative Impacts

Alternative A has no connected actions, and it would not contribute to cumulative impacts on human health and safety in the area.

4.2.8.2 Conclusion

Alternative A would cause few or no additional impacts to human health and safety in Calloway and Stewart counties, or at the specific sites of Fort Heiman, Fort Henry and Fort Donelson.

4.3 ALTERNATIVE B: EXPAND FORT DONELSON BY ADDING FORT HEIMAN AND TEN ELIGIBLE PROPERTIES AT FORT DONELSON NATIONAL BATTLEFIELD

This alternative would seek to enhance protection of Civil War-era resources as well as enhance the visitor experience offered at Fort Donelson National Battlefield by including the Fort Heiman site and the ten eligible battlefield core area properties within the authorized boundary. The NPS, through the staff at Fort Donelson, would also work cooperatively with the USFS at the Land Between the Lakes National Recreation Area to preserve and interpret the historic resources associated with Fort Henry. Fort Henry would remain under USFS jurisdiction however.

4.3.1 Natural Resources

Under Alternative B, the NPS would acquire ownership and management of Fort Heiman, as well as the ten privately-owned eligible battlefield core area properties at Fort Donelson. In accordance with NPS Management Policies, the NPS would manage the natural resources on these lands to maintain them in an unimpaired condition, and to preserve fundamental physical and biological processes. A long-range comprehensive strategy for natural resources management would be developed and implemented for Fort Heiman and the ten eligible properties, as units of FODO, to identify activities necessary to achieve the desired future conditions of the park's natural resources. Such activities may include inventorying, research, monitoring, restoration, mitigation, protection, and resource use management (NPS, 2001). Overall, long-term, localized, moderate, beneficial impacts on natural resources would result from NPS management of Fort Heiman and the eligible battlefield core area properties.

Fort Henry's management would remain largely unchanged, except for greater cooperation between the NPS and the USFS in mapping, inventorying, protecting, and interpreting its historic resources.

Soils and Topography

Under Alternative B, the NPS would take over ownership and management of Fort Heiman and the ten eligible properties at Fort Donelson and, by means of a cooperative agreement, assist the USFS with mapping, inventorying, protecting, and interpreting the historic resources of Fort Henry, which would remain under USFS jurisdiction. Management of these lands would not alter the topography at any of the sites. In accordance with NPS Management Policies, the NPS would actively seek to conserve the soil resources on its lands (i.e. Fort Heiman and the battlefield core area properties in this alternative). As part of these efforts, soils would be managed to control for erosion, physical removal, and contamination (NPS, 2001). Activities that increase soil erosion, such as off-road vehicle (ORV) use, would be controlled on these lands via law enforcement operations. Therefore, localized, minor to moderate, long-term, beneficial impacts on soils are anticipated to result from implementation of this alternative.

As a result of Alternative B, visitation to Fort Heiman and the ten Fort Donelson core area properties would be expected to increase substantially over the current very low level. Increased visitation at these sites could increase soil compaction and erosion potential due to a larger number of visitors walking on and around the sites. In addition, the NPS may well remove some vegetation, including certain trees, from the immediate vicinity of cultural resources, in order to protect those resources and stabilize the sites. Removal of vegetative cover has the potential to increase surface water runoff and soil erosion in the area affected by the removal. These impacts would be temporary to possibly long-term, minor, and localized. However, the NPS would not take any actions that would increase soil erosion at Fort Heiman or the other properties to any noticeable extent. Instead, as stated above, the NPS would take actions to minimize erosion on its lands, which would decrease the intensity of these potential impacts to almost negligible.

Water Resources

As discussed above, increased visitation to the properties may increase soil compaction and erosion potential, due to increased numbers of visitors walking on and around the sites. Increased soil erosion could potentially increase sedimentation and turbidity in nearby watercourses. However, this impact would be negligible, at most. In addition, the NPS would likely remove some vegetation, including certain trees, from the immediate vicinity of cultural resources, in order to protect those resources and stabilize the sites. Removal of vegetation has the potential to increase surface water runoff and soil erosion in the area affected by the removal. However, the NPS would not take any actions that would increase soil erosion on its properties to any noticeable extent. Instead, as stated above, the NPS would take actions to minimize erosion on its lands. Therefore, any potential adverse impacts on water resources associated with increased visitation to the various properties and removal of vegetation would be long-term, localized, and negligible to minor.

In accordance with NPS Management Policies, the NPS would take all actions necessary to maintain and/or restore surface and ground water quality at Fort Heiman and the battlefield core area properties, consistent with the Clean Water Act (CWA) and all other applicable Federal, State, and local laws and regulations. The NPS would determine and monitor the quality of water resources within the park, and would avoid pollution of these waters by human activities

(NPS, 2001). Any derogation of water quality found would be acted upon immediately, and any identified point sources of pollution would be researched and managed accordingly (NPS, 1999a). Therefore, a long-term, localized, moderate, beneficial impact on water resources and water quality would be expected to result from NPS management under this alternative.

At Fort Henry, the USFS would continue to manage forests and soils in such a manner as to minimize soil erosion as well.

Air Quality

Under Alternative B, the NPS would take over ownership and management of Fort Heiman and the ten eligible battlefield core area properties at Fort Donelson, and, by means of a cooperative agreement, assist the USFS with mapping, inventorying, protecting, and interpreting the historic resources of Fort Henry, which would remain under USFS jurisdiction. NPS management of these sites would entail activities that create or increase only minor emissions in the area, nor would management activities generate more than small quantities of fugitive dust. (Construction of light facilities would produce temporary, negligible to minor vehicular emissions and dust.) On the contrary, in accordance with NPS Management Policies, the NPS would work to develop pollution control programs to preserve, protect, and enhance the air quality of the Unit. As part of these efforts, the NPS would inventory air quality-related values associated with the park, evaluate any air pollution causes and impacts, minimize air quality pollution emissions, and monitor air quality conditions (NPS, 2001).

FODO recently completed a Fire Management Plan (FMP) and Environmental Assessment (FODO, 2003), in keeping with the NPS Wildland Fire Management Guidelines (DO-18) mandate that “all parks with vegetation that can sustain fire must have a fire management plan.” Under the park’s preferred alternative, fire management activities would restore and maintain the historic 1862 landscape, control exotic vegetation species, and protect park resources and adjacent private lands from the threat of wildfires. Implementing this FMP, FODO would not employ prescribed fire, but rather, manual/mechanical thinning and fuels reduction in the wildland/urban interface. All wildland fires would be suppressed. Presumably these same practices and actions would be undertaken at Fort Heiman and the battlefield core area properties, once acquired. Thus, the only source of smoke emissions from fire management activities would be wildfires prior to their suppression; these would occur sporadically and infrequently, and thus their overall long-term impact on local and regional air quality would be negligible to minor.

As a result of implementation of Alternative B, visitation to each of the sites is expected to increase over current levels, as is the current number of driving tours throughout the area. Greater numbers of vehicles traveling to Forts Heiman, Henry, Donelson and the eligible battlefield properties the area would increase the amount of emissions generated beyond current levels. Although long-term and regional, this adverse impact is expected to be negligible to minor.

Vegetation and Wildlife

Under Alternative B, the NPS would likely remove some trees from some earthworks at Fort Heiman, particularly certain trees growing out of surviving parapets or earthworks, for the purposes of cultural resource protection. Whenever the NPS removes plants or animals, it is NPS policy to ensure that such removals would not result in unacceptable impacts to native resources, natural processes, or other park resources. Therefore, removal of any vegetation, and any resulting loss of habitat, would, at most, have a long-term, negligible to minor, localized, adverse impact on vegetation and wildlife.

Construction and operation of light visitor facilities and increased visitation at Fort Heiman and the ten battlefield core area properties as a result of implementation of Alternative B, and the movements and noise associated with these visitors, may cause some disturbance to more sensitive wildlife or wildlife in more sensitive phases of their life history, such as nesting or denning. Nesting birds, for example, could abandon their nests if there is too much human foot traffic nearby. However, in many cases, such birds can move to a nearby location and nest again. Overall, any adverse impacts from visitation-related disturbance to wildlife behavior are likely to be long-term, negligible to minor, and localized.

The potential exists for the unchecked movement of pedestrian visitors at Fort Heiman and the Fort Donelson battlefield core area properties to damage or trample vegetation, especially non-woody forbs, herbs, and grasses, but also smaller trees. The NPS would address this situation by clearly marking and signing trails, and by taking additional measures if it appears there is a developing situation of substantial off-trail movement that is damaging plants.

According to NPS Management Policies, the NPS would maintain all native plants and animals at Fort Heiman and the battlefield core area properties, preserving and/or restoring the natural abundances, diversities, dynamics, distributions, and habitats of native populations and their communities and ecosystems. The NPS would also actively minimize human impacts from visitation on native plants and animals, as well as their communities and ecosystems. Whenever possible, the NPS would work with other land managers to encourage the conservation of native species and their habitats outside of NPS lands. These measures would result in a long-term, localized or regional, moderate, beneficial impact on vegetation and wildlife.

Threatened and Endangered Species

As stated in Section 3.1.4.1 of this BAS & EA, the only federally listed species that has been documented in Calloway County that has much chance of occurring at Fort Heiman is the endangered gray bat, which could potentially forage in its lakeside forests. The only federally listed species that could potentially occur on one or more of the battlefield core area properties would be the endangered gray and Indiana bats. In addition, a number of plant and animal species, sub-species and/or varieties listed by the States of Kentucky and Tennessee occur within Calloway and Stewart counties. These organisms do not receive the same level of legal protection as federally listed species. While increased visitation to Fort Heiman and the battlefield core area properties at FODO may increase the potential for disturbance of such wildlife or damage to rare vegetation, NPS management of these sites would allow for much

greater protection of sensitive species, resulting in a long-term, localized, moderate beneficial impact on these species. It is NPS policy to survey for, protect, prevent detrimental effects on, and aim to recover all species listed under the ESA that are native to national park system units.

The NPS would continuously cooperate with both the USFWS, as appropriate, to ensure compliance with the ESA. Among other actions, the NPS would develop and implement programs on its lands to inventory, monitor, restore, and maintain habitats for listed species and to control for detrimental non-native species and visitor access. In addition, the NPS would inventory, monitor, and manage state-listed species in a manner similar to NPS management of federally listed species, whenever possible (NPS, 2001), allowing for much greater protection of these species than under current conditions.

4.3.1.1 Connected Actions and Cumulative Impacts

No adverse cumulative impacts on natural resources are expected to be associated with implementation of Alternative B, with the possible exception of air quality. As discussed in Section 4.3.1 above, beneficial impacts on natural resources would be anticipated under NPS management of all feasible sites. Over the long-term, air quality could be impacted with a cumulative increase in visitor traffic, and associated increases in vehicular emissions, as well as, to some extent, from wildfires (which NPS actions would aim to prevent and minimize).

However, these increases in emissions would not be expected to result in major impacts, such as a change in the NAAQS attainment status of any of the affected counties. Since the current quality of air in the region is relatively good, and the effects of emissions would be distributed across the region, this impact would be minor in intensity.

As discussed in Section 4.1.3 of this BAS & EA, if Alternative B is selected as the action to be taken, the NPS would likely undertake certain developments to enhance visitor experience at Fort Heiman and the FODO battlefield core area properties. Such developments could include: improving access to the site; constructing one or more parking areas for cars, buses, and recreational vehicles (RVs); developing trails around the historic resources; installing interpretive wayside signs and markers; and providing informational pamphlets that describe the historic events. Installation and operation of these developments have the potential to impact natural resources on and around the properties. The following is a general discussion of such impacts, which should be considered in subsequent NEPA documentation at the appropriate time, i.e. when a site-specific development is in the planning and design stages.

Construction of parking areas and trails may require some clearing of vegetation and land grading activities. Removal of vegetation could result in increased surface water runoff and soil erosion in the construction areas, since the presence of vegetation provides erosion control by increasing infiltration and providing soil stabilization. Vegetation removal may also result in the permanent loss of a negligible to minor amount of wildlife habitat. Localized soil disturbance and compaction might result from grading and the use of heavy equipment. Compaction increases the impermeability of the soil, which could contribute to short-term, increased surface water runoff from the project site, and subsequent increases in erosion, and resultant sedimentation and turbidity in nearby watercourses. However, since the sites are generally

located on uplands, and are not traversed by permanent streams, the potential for adverse impacts on water resources as a result of construction activities would be negligible to minor.

Land grading would also result in minor topographic changes to the area. If existing drainage patterns are maintained, grading could also have short- and long-term beneficial effects on natural resources. Land grading helps to control surface water runoff, soil erosion, and sedimentation by providing a flatter surface for construction, thus decreasing the velocity of potential surface water runoff. Land grading also provides long-term stabilization of slopes and soils, minimizing soil loss (NRCS, 1994).

Local air quality could be adversely impacted during construction activities and over the long-term due to the generation of emissions from construction equipment and vehicles. Although the amount of emissions generated would likely have only a negligible to minor impact on air quality, once specific development plans have been made, levels of criteria pollutant emissions would need to be estimated and analyzed against the *de minimis* threshold for each pollutant.

In addition to emissions from construction equipment and vehicles, temporary impacts on air quality may also result from the generation of fugitive dust, especially during activities that disturb soils, such as land grading activities. Fugitive dust emissions would be greater during periods of drought when the topsoil is dry.

Soil erosion, surface water runoff, and fugitive dust would likely be controlled throughout all stages of site preparation and construction by using selected best management practices (BMPs) provided in *Planning and Design Manual for the Control of Erosion, Sediment, and Stormwater* (NRCS, 1994). In addition, construction activities in Kentucky (i.e., Fort Heiman in Calloway County) must follow the Kentucky Best Management Practices for Construction Activities (KNREPC, 1994). A number of BMPs exist to stabilize soils and control runoff and sediments. The NPS or its contractor would select those BMPs that are most appropriate to the circumstances. The contractor would need to submit a Notice of Intent (NOI) letter to the Kentucky Department for Environmental Protection, Division of Water (KDOW) requesting coverage under the State's stormwater general permit. Prior to the start of construction, a Stormwater Pollution Prevention Plan would be prepared and available for review by the KDOW upon site inspection. Implementation of this plan would reduce any adverse impacts from sedimentation and turbidity to a negligible or minor intensity.

Construction activities in Tennessee (i.e., the battlefield core area properties in Stewart County) must follow the Criteria for Area Construction Activities provided in the *Tennessee Erosion & Sediment Control Handbook* (TDEC, 1992). The State of Tennessee requires the control of fugitive dust using specific BMPs (TDEC, 2001c).

As with almost any construction project involving the use of heavy equipment, there is some risk of an accidental POL (petroleum, oil, lubricant) spill or unplanned release of some other toxic or hazardous contaminant onto the ground. If an accidental spill were to occur, localized soil contamination in the affected area would result, posing a risk to human health and safety and wildlife, potentially killing vegetation, and potentially degrading water and air quality in the area. However, the NPS requires that all employees that would be exposed to hazardous

materials be trained and instructed in approved methods for handling and storage of such materials (NPS, 2000d). Therefore, the probability of a spill would be very low. In addition, the potential for an accidental chemical spill during construction could be further reduced by the development and implementation of a Spill Prevention, Control, and Countermeasures (SPCC) Plan, which would also minimize adverse impacts associated with a spill. The NPS has guidelines for the preparation of SPCC Plans, contained in *Envirofacts, Spill Prevention Planning* (NPS, 1999b).

Construction activities would likely cause negligible to minor, temporary disturbance of wildlife on and around the properties due to the presence of workers and noise generated. Potential adverse impacts on vegetation could result from construction activities, including direct damage caused by accidental contact with construction equipment and indirect damage caused by soil compaction, excavation, or filling occurring too close to trees or other vegetation.

Although four federally listed threatened or endangered species are documented in Calloway County, as stated above, the presence of only one of them, the gray bat, is considered possible at Fort Heiman. The habitat preferences and feeding habits of the three others more or less preclude their presence at the site. Given the fairly low-key nature and small “footprint” of possible proposed developments at Fort Heiman, minimal habitat disruption would be caused and effects on gray bats that may be using the site for foraging would be negligible. NPS would coordinate with the USFWS and Kentucky authorities to develop avoidance and mitigation measures, if necessary. This alternative would certainly involve fewer potential impacts to gray bats than Alternative A, under which construction of a number of homes would probably happen.

A number of plant and animal species, sub-species and/or varieties listed by the States of Kentucky and Tennessee are documented from Calloway and Stewart counties, respectively, some of which may actually occur on-site. Only surveys could ascertain their presence or absence. While in general, state-listed organisms do not receive the same level of legal protection as federally listed species, NPS management policies call for treating them in a manner similar to federally listed species, to the greatest extent possible (NPS, 2001; Section 4.4.2.3). Again, due to their probable small magnitude and footprint, potential future NPS developments are unlikely to have more than a negligible or minor impact on any of these listed populations. Where listed species are identified that could potentially be impacted by a forthcoming development, the NPS would coordinate and cooperate with State authorities, in particular the Kentucky State Nature Preserves Commission, the Tennessee Division of Natural Heritage, and the USFWS, to protect these species.

Long-term impacts of potential NPS developments to enhance visitor experience would be minor. Depending on the type of surface used for the parking areas and trails, there is a potential for long-term soil compaction and erosion in these areas. If the surface to be used is an impervious surface, long-term increases in surface water runoff during storm events could occur in localized areas.

Development of minimal facilities and efforts at promotion would certainly lead to increased visitation at Fort Heiman and the Fort Donelson battlefield core area properties. Long-term increased visitation and the presence of more visitors at any one time, due to parking

improvements and expansions, may increase the potential for trampling of vegetation and disturbance of wildlife. However, since trails would be developed at many of the sites, trampling of vegetation would be reduced, and mostly localized to the areas of the trails. Thus, long-term impacts on vegetation and wildlife would be negligible to minor.

4.3.1.2 Conclusion

Implementation of Alternative B would have long-term, localized, minor to moderate, beneficial impacts on soils due to NPS management activities to control for erosion. A negligible to minor, long-term, localized adverse impact on soils may result from increased visitation on the sites and removal of trees for cultural resource protection, resulting in compaction of soils and slightly increased erosion. Minimal impacts on topography would occur if parking lots or trails are constructed.

Negligible to minor, long-term, regional adverse air quality impacts may result from increased vehicular traffic throughout the area and periodic fire management activities. Increased visitation at Fort Heiman and the battlefield core area properties at Fort Donelson, and the removal of trees for cultural resource protection, may result in long-term, localized, negligible to minor impacts on water resources. However, NPS management of the properties would be expected to result in long-term, localized, moderate, beneficial impacts on water resources and quality, due to increased monitoring and protection measures. While long-term, localized, negligible to minor, adverse impacts on vegetation and wildlife may occur due to increased visitation to the sites and removal of vegetation, long-term, localized or regional, moderate, beneficial impacts on wildlife and vegetation, including sensitive species, would be expected under NPS management, due to active protection and preservation measures.

As a result of the addition of Fort Heiman and the ten eligible properties in the battlefield core area to Fort Donelson National Battlefield, there would be no impairment of Fort Donelson's natural resources or values.

4.3.2 Cultural Resources

Under Alternative B, the NPS would acquire ownership and management of Fort Heiman and ten eligible properties in the Fort Donelson battlefield core area. Management of these sites by the NPS would provide for a much higher level of protection of cultural resources than that discussed under Alternative A. Long-term, moderate, localized, beneficial impacts on cultural resources are anticipated to result from implementation of Alternative B.

The NPS would follow NPS Management Policies (NPS, 2001) and the NPS Cultural Resource Management Guideline (NPS, 1997) for the management of cultural resources at Fort Heiman. There are three main components to the NPS cultural management program. These include: 1) research to identify, evaluate, document, register, and establish basic information regarding cultural resources; 2) planning to ensure integration of cultural resource information into management processes, decision-making, and establishment of priorities, as well as consultation and coordination with outside entities; and 3) management to ensure preservation and protection

of cultural resources, and to promote public understanding and enjoyment of those resources (NPS, 2001).

NPS management of Fort Heiman and the battlefield core area properties would allow for the use of the most effective measures and equipment to protect cultural resources on the properties against threats, including looting, vandalism, overuse, natural or human-imposed degradation or deterioration. All resources on the sites would be monitored regularly, and conditions at the sites would be evaluated against baseline data to detect potential threats and damages. The NPS would take measures to stabilize the resources at Fort Heiman and the Fort Donelson battlefield core area to protect those resources against erosion, slumping, or other forms of deterioration, enhancing long-term preservation (NPS, 2001).

Under Alternative B, visitation to Fort Heiman and the battlefield core area properties is expected to increase substantially over current low levels. Increased visitation may lead to an increase in human impacts on cultural resources, such as vandalism, looting, or accidental harm. In accordance with the General Management Plan (GMP) for FODO, law enforcement and facility maintenance would be undertaken at Fort Heiman to protect and preserve site conditions on the property (NPS, no date-a). The increased presence of NPS personnel and enforcement of protection measures would minimize any potential adverse human impacts on cultural resources, keeping these impacts at a negligible to minor level. In addition, in accordance with NPS Management Policies, the park superintendent would establish a visitor carrying capacity at Fort Heiman and the battlefield core area properties to protect the resources on the sites. This carrying capacity would be enforced and monitored by NPS personnel (NPS, 2001). Establishment of a visitor carrying capacity would minimize any adverse impacts on cultural resources associated with unrestricted levels of visitation.

NPS management would provide for the long-term preservation of cultural resources, and would aim to enhance public understanding and appreciation of all features and qualities that contribute to the significance of the resources at the sites (NPS, 2001). Enhancement of public understanding of the significance of the cultural resources, and knowledge of the reasons the resources are being protected and preserved may help to enlist the public in protection of the resources. The education and interpretation program and exhibits at the Fort Donelson battlefield itself will be modified to give greater emphasis and acknowledgement to the roles of Forts Heiman and Henry, and the battlefield core area properties in the series of interconnected battles that occurred in 1862.

NPS management of Fort Heiman and the ten eligible battlefield core area properties would allow for long-term protection of cultural resources on the property. Prior to any decision-making regarding activities on or uses of Fort Heiman and the other properties, an analysis of how such activities or uses would affect cultural resources would be conducted in consultation with the State Historic Preservation Office, and consideration would be given to alternatives that minimize or avoid any adverse impacts on these resources. In addition, the park's GMP would outline and prescribe programs to identify, assess, manage, and monitor cultural resources at the Fort Heiman unit and the Fort Donelson battlefield core area properties. This portion of the plan would be required to be updated periodically, in coordination with land uses and resource conditions.

One potential impact of Alternative B that may result in minor adverse effects on the cultural resources both at Fort Heiman and the eligible battlefield core area properties would be potential developments on adjacent lands not managed by the NPS. One example of this might be an increased demand for commercial land uses as a result of increased visitation to the area. Although the NPS would develop partnerships and agreements with adjacent landowners to help assure cultural resource protection, no guarantees or restrictions against private developments would be assured. In accordance with NPS Management Policies, the park superintendent would monitor land use proposals and changes to adjacent lands, and the potential impacts that such changes may have on park resources or values. Compatible adjacent land uses would be encouraged. In addition, a land protection plan should be developed for lands adjacent to Fort Heiman and Fort Donelson to document which need to be in public ownership to carry out park purposes. This plan would guide the park's land acquisition priorities, with consideration given to the relationship between the park and adjacent land uses and threats that those land uses may have on park resources (NPS, 2001). Implementation of these management policies would reduce potential adverse impacts on the park's cultural resources resulting from land use changes or incompatible land uses within or adjacent to park boundaries.

At Fort Henry, the USFS and LBL would continue to protect cultural resources as they do at present, with greater participation and cooperation with the NPS. Overall, there would be no change to these resources under Alternative B.

4.3.2.1 Connected Actions and Cumulative Impacts

No projects or activities occurring in the region would adversely impact cultural resources at Fort Heiman, Fort Henry, or Fort Donelson. On the contrary, NPS management practices to protect and preserve these resources would only be beneficial.

Other heritage tourism projects and developments in the wider region, particularly the Vicksburg Campaign Trail, would likely serve to increase visitor and public awareness, appreciation and knowledge of the significance of the cultural resources at the Forts Heiman, Henry, and Donelson properties. Enhancement of public understanding of the significance of the cultural resources, and knowledge of the reasons the resources are being protected and preserved, may help to enlist a wider spectrum of the public in the protection of these resources. This would have a long-term, minor to moderate, localized, beneficial impact on cultural resources.

As discussed in Section 4.1.3 of this BAS & EA, if Alternative B is selected, the NPS would likely undertake developments at Fort Heiman and the ten eligible battlefield core area properties to enhance the visitor experience there. Such developments could include: improving access to the sites; constructing parking areas for cars, buses, and RVs; developing trails around the sites; installing interpretive wayside signs and markers; and providing informational pamphlets that describe the historic events. Unless due caution is taken, these developments could potentially impact cultural resources on the properties. The following is a general discussion of such impacts, which should be considered in subsequent NEPA documentation regarding these developments.

Construction activities, particularly ground-disturbing activities associated with future NPS developments, have the potential to adversely affect or damage cultural resources at Fort Heiman and the ten eligible properties at Fort Donelson. Prior to commencing ground-disturbing activities at any of the sites, the NPS would coordinate and consult with the Kentucky and Tennessee State Historic Preservation Offices (SHPO's) to ensure compliance with Section 106 of the NHPA. To avoid impacts on cultural resources during construction, a qualified archaeological monitor should be required to be present during initial grading activities in the event of unanticipated discoveries of cultural materials.

Development of trails would allow for more visitors to fully walk the sites and to access the historic resources on the sites at Fort Heiman and the ten eligible battlefield core area properties. Increased site access and visitation may increase the potential for adverse human impacts, such as vandalism or looting, on cultural resources at the fort and battlefield properties. However, NPS law enforcement and facility maintenance would be undertaken to protect and preserve site conditions, thus reducing the potential intensity for these adverse human impacts to a minimal level.

The installation of interpretive way side signs and markers would enhance public awareness and appreciation of the importance of the resources present at each of the sites. This enhanced public understanding and awareness may aid in long-term protection of these same resources, as well as other Civil War resources.

4.3.2.2 Conclusion

NPS management of Fort Heiman and the ten eligible properties in the battlefield core area of Fort Donelson would have long-term, moderate, beneficial impacts on the cultural resources present at the historic fort and battlefield sites. Active protection and preservation measures would be undertaken under NPS management to reduce or prevent human and natural threats to these resources, including those impacts associated with increased visitation. Beneficial impacts would also result from increased public and visitor understanding and knowledge of the significance of cultural resources, potentially providing increased interest in and support for long-term protection of these resources. While adverse impacts on cultural resources may result from developments or uses of adjacent lands, NPS would take an active role in monitoring and evaluating these potential impacts, and would work with adjacent landowners to ensure compatible uses of their lands.

Alternative B would lead to essentially no change in the cultural resources at Fort Henry.

As a result of the addition of Fort Heiman and the ten eligible properties to Fort Donelson National Battlefield, there would be no impairment of Fort Donelson's cultural resources or values.

4.3.3 Visitor Use and Experience

Under Alternative B, Fort Heiman and ten eligible battlefield core area properties around Fort Donelson would be added to Fort Donelson National Battlefield and managed by the NPS. The historical integrity of the surviving earthworks would be preserved and interpreted in greater depth. Visitors would be able to walk along paths around the historic fort site and observe remaining features and fortifications, perhaps with the aid of diagrams and informational brochures. Ranger tours or tours led by volunteers might also be provided. The impacts on visitor use and experience of adding Fort Heiman and the battlefield core area properties to FODO would be long-term, moderate in intensity, and beneficial.

School groups from several surrounding counties could benefit tremendously from opportunities to visit Fort Heiman and the battlefield core area properties and from the placement of interpretation at the sites. A park ranger or a trained volunteer might even guide a group along paths through the woods to some of the fortifications to discuss military strategy, the importance of landform in selecting the fort site, the importance of Fort Heiman in guarding the Tennessee River, and the role of the battlefield core area properties in the conduct and outcome of the Battle of Fort Donelson.

However, additional publicity given to Fort Heiman and the other properties by the NPS could potentially lead to congestion at a small parking lot, particularly if one or more large tour buses were stopped simultaneously. This could cause a long-term, localized, minor to moderate, adverse impact on visitor use and experience.

Passive Recreation: Passive recreation refers to non-consumptive activities, such as wildlife watching, hiking, walking, biking, and canoeing. On-site facilities are non-existent or minimal. There is little interaction with other persons.

Low Density Recreation: Low-density recreation refers to recreational activities requiring a minimal level of facilities. These may include parking lots, restrooms, and interpretive signage. Some interaction with other persons occurs.

The management of Fort Heiman and the battlefield core area properties by the NPS should help to prevent further diminution of the historic integrity of earthworks and fortifications from natural processes and human development, and would certainly improve their long-term viability. This would happen as a result of an increase in available funding to preserve the site, additional site work and preservation measures that might be undertaken, and increased law enforcement against vandalism and other inappropriate uses. Under NPS management, improvement of the quality of the existing visitor experience would be enhanced and maintained at Fort Heiman as well as the ten eligible battlefield core area properties around Fort Donelson, resulting in a localized, long-term, beneficial, moderate impact on visitor use and experience.

Visitors would be able to follow the history of the fort with diagrams and informational brochures, and through paths on the battlefield or at the fortifications. Park ranger tours might also be provided. Walking trails, benches, and selective landscaping would increase access to the sites and allow visitors to retrace paths of the fort's builders, occupiers and defenders. The impacts on recreational opportunities resulting from Alternative B would be long-term, moderate

in intensity, and beneficial. These impacts would accrue to both Calloway County and the region.

Although it is not possible to accurately forecast visitation, it is possible to get a rough estimate of potential visitation by looking at visitation to 36 comparable NPS units devoted to Civil War and Revolutionary War history in this part of the country (Appendix F). A reasonable, perhaps conservative, range for annual visitation to Fort Heiman would be 10,000-20,000. Visitation to the battlefield core properties may be somewhat greater, due to their closer proximity to FODO itself and its facilities. This proximity would allow for greater ease and convenience of visitation on the part of visitors already headed to Fort Donelson National Battlefield itself. If at some point in the future the NPS were to develop more extensive visitor facilities either at Fort Heiman or any of the battlefield core area properties, visitation could increase substantially over this range.

At Fort Henry, due to increased cooperation between the USFS and the NPS, there may be a slight beneficial impact on visitor use and experience.

4.3.3.1 Connected Actions and Cumulative Impacts

Implementation of Alternative B, along with the other heritage tourism and recreation developments occurring in the area (see Section 4.1.3 of this BAS & EA), would have a beneficial cumulative impact on visitor use and experience. Whether tourists first visit Fort Heiman, Fort Henry, Fort Donelson, or other attractions in and around LBL, Murray, and Dover, it is likely that visitors would gain an increased knowledge and understanding of the historical significance of the area in the Civil War, in the larger context of the nation's history.

Overall, the cumulative effects on visitor use and experience associated with Alternative B should be long-term, regional, moderate in intensity, and beneficial.

As discussed in Section 4.1.3 of this BAS & EA, if Alternative B is selected as the action to be taken, the NPS would likely undertake developments to enhance visitor experience at Fort Heiman and the ten eligible properties at Fort Donelson. Such developments could include: improving access to the site; constructing parking area(s) for cars, buses, and RVs; developing trails around the different sites of interest at the fort; installing interpretive wayside signs and markers; and providing informational pamphlets that describe the historic events. These developments have the potential to impact visitor use and experience over the short- and long-term. The following is a general discussion of such impacts, which should be considered in subsequent NEPA documentation regarding these developments.

Construction activities, such as the construction of parking areas and trails, may result in temporary, localized, adverse impacts on visitor use and experience at the site under construction. Access to Fort Heiman and the FODO battlefield core area properties may temporarily be restricted, preventing visitation to the site. In addition, the noise and visual impacts resulting from construction, as well as the presence of construction workers in the area, would temporarily degrade visitor experience, and potentially lead to a temporary, sizeable reduction in the number of visitors to Fort Heiman and the other properties.

While there would be temporary adverse impacts on visitor use and experiences resulting from construction, long-term impacts on visitor use and experience would be beneficial. All potential future developments would enhance long-term visitor use and experience at the sites. Improved access and increased parking at the sites would likely lead to an increase in the number of visitors at Fort Heiman and the eligible battlefield core area properties. Trails would also improve access to the earthworks and other site features. Installation of interpretive signs and markers, and the provision of informational pamphlets, would allow for a more educational and interpretive experience at sites.

Improved access to Fort Heiman and the Fort Donelson core area properties might also result in minor adverse impacts on visitor use and experience. Congestion in parking lots, access roads, and trails might conceivably occur, since people would more easily be able to access the site, and additional parking space would allow more people to visit at the same time.

There would be no impacts to or at Fort Henry from this alternative, since nothing would change there. At Fort Donelson National Battlefield itself, visitor use and experience will be improved and expanded by the offering the opportunity to visit the related battlefield sites and Fort Heiman as well as give them greater emphasis in interpretive programs and materials.

4.3.3.2 Conclusion

The impacts on visitor use and experience resulting from the addition of Fort Heiman and the ten eligible battlefield core area properties at Fort Donelson would be long-term, regional, moderate in intensity, and beneficial. However, the additional marketing of the fort and battlefield sites by the NPS could potentially lead to congestion, although this is not considered likely for some years, if ever. This could cause a long-term, localized, negligible to minor, adverse impact on visitor use and experience.

The management of Fort Heiman and the battlefield core area properties by the NPS should help to prevent further diminution of the historic integrity of earthworks and fortifications, and could improve their long-term viability. Under NPS management, improvement of the quality of the existing visitor experience would be enhanced and maintained, resulting in a localized, long-term, moderately beneficial impact on visitor use and experience. Visitor use and experience at Fort Henry would not change substantially. It would be enhanced at Fort Donelson itself, by offering visitors greater opportunities for seeing historic resources “on the ground,” both nearby and less than an hour away, as well as new angles on interpretation.

4.3.4 Socioeconomic Environment

Population, Economy, and Social Conditions

There are expected to be very small, if any, changes in the resident population of the area due to the acquisition and management of Fort Heiman and the ten eligible battlefield core area properties at Fort Donelson by the NPS. The number of new jobs that could be created by

additional visitation to the fort is expected to be negligible, and could be filled by members of the local labor force.

Economic impact analysis estimates the impact of dollars being spent in the community from outside the region (“new dollars”). New money can be used to pay wages to local workers and to purchase goods from local businesses. When an industry produces a good or service, it pays wages and benefits to workers and it pays to purchase inputs from its supplier industries. These wages, benefits, and input prices are the **direct effects** of the new money. When the supplier industries, in turn, increase their production to meet demand, the wages and benefits they pay their workers, and the price they pay for their input goods and services, are the **indirect effects** of the new money. When the workers from both these businesses, in turn, spend their wages to buy food, go to movies, purchase a car, etc., the results are **induced effects** of the new money. Adding the effect categories together, one can estimate the **total economic effect** of new money on a local economy. The economic impact of the new spending is a function of the diversity of the regional economy, and how much is imported.

Economic Effects

Direct Effects: Economic impacts of the initial purchase of a final product.

Indirect Effects: Changes in inter-industry purchases as a result of initial purchase of a final product.

Induced Effects: Economic impacts due to changes in spending by households due to income changes from changes in the production of goods and services.

With the acquisition of Fort Heiman and the battlefield core area properties and their inclusion in FODO, visitors are somewhat more likely to stay overnight in the Calloway County/Stewart County area than they are without any expansion of FODO’s boundaries, as under Alternative A. A New Jersey driving tour study defines two types of visitors to a given area. ‘Excursionists’ are defined as those visitors that stay less than 24 hours in the destination visited, while ‘tourists’ are visitors staying at least 24 hours in the destination visited (UMTRI, 1996). Under Alternative B, excursionists are somewhat more likely to become tourists. The New Jersey driving tour study found that for both types of

visitors, approximately 32 percent of visitor spending was spent on lodging, 40 percent was spent on food and beverage, 17.5 percent was spent on retail, 5.5 percent was spent on vehicle-related expenditures, and 5.5 percent was spent on sightseeing and recreational activities (UMTRI, 1996).

Increased visitation in the area due to the addition of Fort Heiman and the ten eligible properties to Fort Donelson National Battlefield could produce economic benefits. These benefits derive from tourist spending in sectors that have high capture rates (see text box) by local businesses (e.g., food and beverage, lodging, and recreation services). A study conducted by the Preservation Alliance of Virginia on the economic benefits of heritage tourist spending indicates that, in Virginia, historic preservation visitors tend to stay longer in an area, visit twice as many places in an area, and spend, on average, over 2.5 times more money than other visitors (PAVA, 1996). A 1997 study of visitors to a Civil War Driving Tour in the State of Virginia found average spending per person per day of \$73.26, versus \$46.62 for all leisure travelers (Bowman, 2001). A New Jersey study of heritage travelers conducted from 1993 to 1995 found that primary heritage overnight visitors actually spent less per night than partial heritage visitors and all New Jersey visitors, \$37.20 versus \$64.46 and \$65.06, respectively. This was attributed to

the fact that primary heritage visitors tend to stay for shorter periods of time than partial heritage visitors (NJHT, 1997). Thus, they spend less on high local value-added services in the lodging and food and beverage sectors.

Addition of Fort Heiman and the battlefield core area properties at FODO would most likely increase the length of time heritage visitors spend touring in the region, and the amount spent on retail, food and beverage, recreation, sightseeing, and sales tax. The distance between Forts Heiman, Henry and Donelson might even prompt some visitors to spend an additional night in Dover or Murray. If a visitor put in a partial day visiting the FODO and the Dover Hotel, he or she might stay overnight to take the trip over to Forts Heiman and/or Henry.

Hence, NPS acquisition and management of Fort Heiman and the ten eligible properties is likely to increase the probability that a visitor would stay in the Calloway County-Stewart County area at least for an additional half day. This would create positive economic impacts through an increase in the local lodging and food service sales tax collections, and the possible expansion, at a future date, of the capacity of the hospitality industry (i.e., construction of new hotels and restaurants). The magnitude of the potential growth is unknown at this time. The potential beneficial impact should be regional, long-term, and minor to moderate in intensity.

What is a Capture Rate?

When you purchase an item some of the price goes to the producer of the good. For instance, when you purchase a car, some of the price you pay, say 60%, is returned to the assembly plant, which is usually located in a different state or country. Some of the price you pay, say 30%, becomes corporate revenue and is held in out-of-state or offshore banks and securities. The remaining portion, say 10%, is the local car dealer's revenue. This 10% is used to buy office supplies, pay employees, pay a local accountant, etc., and is known as the local economic capture rate.

Lodging, food and beverage, and recreation fees tend to have high capture rates; these businesses are labor intensive and many of the supplies are locally purchased.

Another modest potential economic impact from the addition of Fort Heiman and the ten eligible properties to FODO is the possible creation of one or more additional full-time equivalent (FTE) positions with the NPS dedicated to managing or working at that site. About 60 percent of any new hires are expected to be local residents. This beneficial impact should be long-term, regional, and have a negligible impact on total employment in the two counties.

There is strong community support for the addition of Fort Heiman and the battlefield core area properties to FODO. This is evidenced by the support of a local friends group, the county executives of both Calloway and Stewart counties, both state governments, and large numbers of the public. During the July 2002 scoping meeting for the project (see Appendix D of this BAS & EA), held in Dover, as well as two other public meetings held in the spring of 2002 on the Vicksburg Campaign Trail in both Dover and Murray, public reaction was universally in favor of expanding FODO's boundaries to include Fort Heiman.

While community support for the project is strong, an increase in the number of visitors and tourists to the area could potentially have some adverse social impacts on the community, especially residents living in the immediate vicinity of Fort Heiman and the battlefield core area

properties or along access roads. For example, during scoping, one neighbor who farms in Calloway County privately voiced concern about increased traffic along the small, low-capacity country roads leading to Fort Heiman.

Doxey's index of irritation, which represents changing attitudes of a host community, is based on a linear sequence of increasing host irritation as the number of tourists in the area grows. In the presence of tourist development, hosts pass through stages of euphoria, apathy, irritation, antagonism, and loss. How this sequence progresses is determined by how compatible tourists and hosts are in terms of culture, economic status, race, and nationality, and how many tourists are present in the community (Molnar et al., 1996). Having so many non-residents visiting the community could cause minor annoyance to local residents and they may resent the intrusion. This is particularly true because both Fort Heiman and the battlefield core area properties are located in rural or small-town areas with low traffic that is almost all local in origin. If necessary, these impacts could be partially mitigated through the purchase of properties in the immediate area that would be negatively impacted by the increased traffic and noise.

In addition, an increase in visitors to Fort Heiman and the ten eligible properties at Fort Donelson could hypothetically increase the probability of site vandalism. Problems with vandalism have occurred at other historic Civil War sites. In addition, access to Fort Heiman and the other properties along narrow, small roads through rural and urban fringe residential areas could create conditions unfavorable to tourists. These social impacts are expected to be localized, long-term, and negligible to minor in intensity. These impacts, particularly incidents of vandalism, would be reduced by an increased presence of NPS personnel at Fort Heiman and the Fort Donelson battlefield core area properties. In accordance with the FODO's GMP, law enforcement and facility maintenance would be undertaken to protect and preserve site conditions at Fort Heiman and the battlefield sites (NPS, 1999a). In addition, the purchase of adjacent properties on a willing-seller basis, if necessary, would create a buffer around any developments at Fort Heiman and the ten eligible battlefield core area properties, further reducing these adverse social impacts.

School groups should benefit tremendously from the addition of Fort Heiman and the ten eligible properties to Fort Donelson and its management by the NPS. Students would gain awareness and knowledge of their local history, as well as being able to see, first-hand, the vestiges of the fort. A park ranger might even guide a group along paths through the woods to some of the fortifications to discuss military strategy, the importance of landform in selecting the fort site, the strategic importance of Fort Heiman in guarding the Tennessee River, and the role of the battlefield core area properties in the conduct and outcome of the Battle of Fort Donelson. As a result of the visits, children might also gain appreciation for some earthworks or other artifacts from the Civil War they discover in and around their own neighborhoods, while playing in the woods and fields. This beneficial impact should be long-term, regional, and minor.

Utilities and Public Services

Under Alternative B, the NPS would acquire Fort Heiman and ten eligible properties on the core battlefield area at Fort Donelson and at some undefined point in the future perhaps construct small-scale facilities there. Management of Fort Heiman and the battlefield properties would not

involve any activities that would have the potential to disrupt or damage utility lines in the area. In addition, no additional utility hookups would be necessary as a result of this alternative.

As a result of Alternative B, visitation to Fort Heiman and the battlefield core area properties would be expected to increase over the current level. Increased visitation may result in an increase in the demand for utilities and public services in the area. As more visitors come to the area and stay overnight, increased use of water, electricity, and gas would be expected for the area. However, this increase would only be expected to have a negligible to minor impact on levels of demand in the area, and should not require any additional utility connections or increased capacity. The increased presence of visitors and traffic in the area would likely result in a proportionate increase in the demand and need for public services, such as law enforcement. Overall, these impacts would be long-term, negligible to minor, and regional.

4.3.4.1 Connected Actions and Cumulative Impacts

As discussed in Section 4.1.3 of this BAS & EA, there are various heritage tourism and recreation developments occurring in the region. All of these developments indicate support for expanded recreational opportunities and heritage tourism in the area.

The primary attraction bringing heritage visitors to the Calloway County – Stewart County area to spend money is Fort Donelson. Other heritage tourism and recreational developments, when combined with the expanded Fort Donelson, would increase the plottage effect (see text box). Expansion of FODO's boundaries to include Fort Heiman and the other properties, coupled with other projects in the area, is likely to keep people in the area for a longer period of time, spending more money. This economic impact would be long-term, beneficial, and negligible to minor in intensity.

What is Plottage?

Plottage, or assemblage, is a term typically applied to real estate. It is the increment of value that results when two or more sites are combined to produce greater utility (AI, 1996).

For recreation attractions, plottage can be thought of as a concentration of recreational opportunities. For example, Fort Donelson National Battlefield is like the anchor store in a shopping center, and sites added to the FODO are the satellite stores that benefit from shoppers visiting the anchor site.

The other heritage tourism and recreational developments, when combined with the expanded Fort Donelson, would also beneficially impact recreation in the region. With more activities to engage in, visitors would have more to do without having to drive long distances. This increase in recreation is expected to be long-term and minor to moderate in intensity.

As discussed in Section 4.1.3 of this BAS & EA, if Alternative B is selected as the action to be taken, the NPS would likely undertake developments to enhance visitor experience at Fort Heiman and the ten eligible battlefield core area properties at Fort Donelson. Such developments could include: improving access to the fort; constructing one or more parking areas for cars, buses, and RVs; developing trails around the sites; installing interpretive wayside signs and markers; and providing informational pamphlets that describe the historic events. These developments have the potential to impact the socioeconomic environment over the short- and

long-term. The following is a general discussion of such impacts, which should be considered in subsequent NEPA documentation regarding these developments.

No changes in the local or regional population would be anticipated as a result of future NPS developments at Fort Heiman and the eligible properties at Fort Donelson. Construction activities could create employment in the area, as well as temporarily increase local and regional income and revenues. These beneficial impacts would have a negligible to minor impact on the regional economy, and would only be of temporary duration. No permanent employment opportunities would be created by these potential future developments, and no long-term associated economic benefits would result. An additional negligible to minor, beneficial economic impact that could potentially result from construction contracts would be an increase in State revenue from collection of a contractor's tax, if the contracts awarded are more than \$10,000.

Economic impacts resulting from construction activities would largely depend on who is awarded the construction contracts, the costs of the developments, and whether materials and labor come primarily from local suppliers or suppliers outside of the region. The higher the percentage of local suppliers, materials, and labor used, the higher the local benefits would be. This would also determine whether new jobs are created, or whether existing workers are used. Construction contracts would likely be awarded competitively, and either local or non-local firms could win the bidding.

Potential future NPS developments at Fort Heiman and the ten eligible properties in the Fort Donelson battlefield core area may have temporary and longer-term, negligible to minor adverse social consequences. Temporary construction activities, and associated noise and traffic impacts, may disturb and/or receive opposition from nearby residents, although the likely projects are of a small enough scale that this is deemed improbable. Improved access and parking at the sites may increase the number of visitors to sites over the long-term, as well as the number of visitors at a given site at any one time. Such congestion and increased traffic may also disrupt and/or receive community opposition, although once again, the numbers of visitors would probably be too low to instigate such opposition.

Cumulative impacts on utilities and public services would result from somewhat more visitors being in the Murray-Dover region at the same time, and for longer periods of time. The demand for utilities and public services would also increase; however, additional utility hookups would only be necessary if commercial uses in the area were to expand. However, the NPS would aid in public service responsibilities on their lands, further reducing the increase in demand.

4.3.4.2 Conclusion

Implementation of Alternative B would produce negligible changes to the resident population of the area. Increases in employment and visitor spending associated with this alternative would have long-term, beneficial effects on the regional economy. While the beneficial effects resulting from employment opportunities would be negligible, effects associated with visitor spending are expected to be minor to moderate in intensity. Socially, long-term, minor, beneficial impacts would be experienced by the regional community, due to high levels of

support for expansion of Fort Donelson National Battlefield to include Fort Heiman and ten eligible properties in the FODO battlefield core area. However, adverse social impacts may result from nuisances, such as occasional congestion or trespassing. These adverse impacts would be long-term, localized, and negligible to minor in intensity.

Alternative B would modestly increase the amount and diversity of available recreational opportunities in a region that already boasts recreation assets in both quantity and quality. This beneficial impact would be long-term and minor to moderate in intensity. The resultant plottage effect would have long-term, regional, negligible to minor, beneficial impacts on the economy and visitor spending.

Implementation of Alternative B would have no potential to damage or disrupt utilities in the area, or require additional utility connections. However, increased visitation to the region as a result of this alternative would increase demand for utilities a minor amount. The demand for public services in the region would also incur a minor increase, particularly in the area of law enforcement due to traffic problems.

4.3.5 Transportation

Access to Fort Heiman from both Dover and Fort Donelson to the east and Murray to the north would be along SR 121, followed by driving along two county-maintained roads (Cypress Trail, Kline Trail, and Ft. Heiman Rd) for approximately four miles to the fort. Access to the ten eligible properties in the Fort Donelson battlefield core area from the existing national battlefield itself would be via several local streets and roads, including Main Street, Wynns Ferry Road, and Forge Road.

It is not possible at this time to accurately project how many people would visit Fort Heiman annually under this alternative. However, a reasonable range for the foreseeable future, based on visitation figures for similar NPS units related to military history in the South (see Appendix F), would be 10,000-20,000 visitors per year. If more facilities were developed over time at Fort Heiman, this level of visitation could grow substantially. Assuming that 80% of the visitors are members of the public and 20% are K-12 or university students arriving by bus, and further assuming two visitors per car and 25 students per bus, then 4,000-8,000 private vehicles (including autos, SUV's, and RV's) and 80-160 school buses annually would visit the site. This translates to a daily average of approximately 11-22 private vehicles and less than 1.0 school buses (on week days during the school year). The ADT for SR 121 is 1870; using the assumed range, the ADT would be raised to approximately 1880-1895, or a traffic increase of about one percent above current levels. This would not change the LOS on SR 121 from its current A or B condition in the vicinity of the exit to access the fort.

ADT's for Cypress Trail, Kline Trail and Ft. Heiman Road are unknown, but they would be considerably less than the 1870 for SR 121. Thus, the percentage increase in traffic along these roads would be much higher, but even 22 vehicles more per day would not cause problems with traffic on these collectors and local roads. Given the levels of visitation likely to occur over the

foreseeable future, impacts to transportation and traffic are expected to be localized, long-term and negligible to minor.

Along streets and roads leading to the ten eligible battlefield core area properties near FODO, traffic increases would probably be greater than those leading to Fort Heiman. These increases are not expected to change LOS or produce more than minor, localized traffic congestion.

Nevertheless, Alternative B could still lead to the following potentially adverse, localized impacts on the road systems in nearby portions of Calloway and Stewart counties:

- Increased risk of injury to pedestrians, bicyclists, children and animals due to the increased number of cars moving along back roads through residential areas;
- Limited or insufficient turnaround radii for buses and RVs, due to narrow road width;
- Increased wear and tear on roads; and
- Increased incidence of accidents.

The duration of these impacts are expected to be long-term. The intensity of the impacts would range from negligible to minor. These potential problems would be exacerbated by the fact that many people driving the local roads would be unfamiliar with the terrain and local traffic patterns. The intensity of these impacts would occur at the local level rather than the regional level.

To help reduce these adverse impacts on these roads, the NPS would work with the States of Kentucky and Tennessee Department of Transportation and Calloway and Stewart County highway engineers to protect public safety. Measures could include: additional signage; establishment of speed limits, especially around curves; and special restrictions for buses and RVs. If necessary, stronger measures like redesign of intersections, realignment of curves to improve line-of-sight, and road widening could be undertaken.

4.3.5.1 Connected Actions and Cumulative Impacts

Potential construction-related impacts at Fort Heiman and the FODO battlefield core area properties on local and county transportation systems would be temporary and localized in geographic extent. Most of the projected improvements are modest in nature, and would not be major construction projects requiring extensive excavating or hauling. Much of the work should involve landscape and paving contractors. The primary transportation impact resulting from construction would be increased congestion on local roads from slow-moving and turning construction vehicles. The impact is expected to be negligible to minor in intensity.

Long-term impacts associated with these future developments would have both adverse and beneficial, minor transportation-related impacts. Improvements to site access road(s) would increase the safety level of these roads, and would provide easier access to Fort Heiman and the battlefield core area properties. Parking would also be enhanced at each site, reducing any potential congestion from vehicles stopped along the roadside, or from entering or leaving the

parking areas. While improved access would be a beneficial impact, it could lead to increased visitation at each of the sites, increasing congestion and traffic along local roadways.

Other transportation projects and trends are occurring or are projected to occur in the counties and the overall region that might affect the transportation system and traffic. However, the relatively minor increases in traffic or transportation impacts associated with Alternative B would not contribute appreciably to either adverse or beneficial direct or indirect impacts on the region's transportation system or traffic. Therefore, implementation of Alternative B would not contribute substantially to cumulative transportation impacts in Calloway and Stewart counties.

4.3.5.2 Conclusion

Alternative B would result in long-term, localized and regional, negligible to minor, adverse increases in traffic congestion and delays, local road damage, and the incidence of vehicular-related accidents. There would also be long-term, localized, and negligible to minor, adverse increases in noise levels and degradation of visual quality due to increases in visitation and visitor traffic.

4.3.6 Land Use

The whole idea behind a national historic park is to preserve the landscape and maintain its historic integrity. Short- and long-term land use on Fort Heiman and the eligible battlefield properties at FODO is not likely to change much from existing uses after NPS acquisition, with the exception of some minor future site improvements, such as walking trails, parking lots, and bus turnarounds. The land use types would range from passive to low-density outdoor recreation. Currently, the land use at all the sites is wooded and pastoral, rural residential, although population density in the vicinity both of Fort Heiman and the FODO battlefield core area properties is increasing.

The boundaries of Fort Heiman should be established to promote preservation of the existing rural landscape near the fort. By acquiring additional land when it becomes available within the boundaries, the NPS could preserve the integrity and rural, tranquil character of the site. Any land use changes within the park boundaries would most likely occur from development activities of private landowners within the boundaries, of which there may be a number at first, due to the earlier subdivision of the main property. The potential exists, over the long-term, for the development of incompatible residential, commercial, or resource exploitation uses adjacent to NPS-owned sites, particularly in the areas that are not zoned.

In accordance with NPS Management Policies, the park superintendent would monitor land use proposals and changes to adjacent lands, and the potential impacts that such changes may have on park resources or values. Compatible adjacent land uses would be encouraged. In addition, a land protection plan should be developed for Fort Heiman and the battlefield core area properties to document which lands need to be in public ownership to carry out park purposes. This plan would guide the park's land acquisition priorities, with consideration given to the relationship between the park and adjacent land uses and threats that those land uses may have on park

resources (NPS, 2001). Implementation of these management policies would reduce potential adverse impacts on the park resulting from land use changes or incompatible land uses within or adjacent to park boundaries.

Extending the boundaries of FODO to include Fort Heiman and the eligible battlefield core area properties could have a potentially minor to moderate impact on land ownership in Calloway and Stewart counties, and by extension, their tax bases. Property taxes are generally levied at the county and city level. Land owned by the NPS is tax exempt, and payments in lieu of taxes (PILT) are made (see text box).

Over the long-term, depending on actual visitation levels and associated traffic, the highest and best use of at least some residential parcels near Fort Heiman and the FODO battlefield core area properties could change to commercial. Above a certain threshold, increases in traffic might cause residential property values to decrease if the perceived nuisance or inconvenience increases. At a still higher threshold, the property might be worth more for commercial development than residential. It is difficult to project what the impact of visitation and development would be on individual sites, and how these impacts would interact with other economic forces affecting property use and value. Yet another possibility is that surrounding property values could increase, due to the perception that having permanently protected open space nearby is valuable for a number of reasons.

Payments In Lieu Of Taxes: Payments to local governments containing federally owned lands. Recognizing the inability of local governments to collect property taxes on federally-owned land, Congress enacted the Payment in Lieu of Taxes Act (Public Law 94-565) in 1976. The Act provides for payments to local governments containing certain federally-owned lands. Local governments, usually counties, that provide services such as public safety, environment, housing, social services and transportation and have non-taxed federal land within their jurisdiction are eligible for payments. Payments are made directly to the counties unless the state government concerned chooses to receive the payments and, in turn, pass the money on to other smaller governmental units such as a township or city.

Given the uncertainty of the direction of land value, a conservative finding is that there could be a short-term, localized, negligible to minor adverse impact on land values in the areas around Fort Heiman and the battlefield core area properties. If the areas are rezoned, there could be a long-term, localized, moderately beneficial impact on property values. Since rezoning is not a reasonably foreseeable event, given the uncertainty as to traffic and visitation levels, as well as the lack of land use zoning in the area at present, this potential long-term impact does not offset the short-term impact.

4.3.6.1 Connected Actions and Cumulative Impacts

Negligible land use changes would occur from construction activities associated with potential future NPS developments at Fort Heiman and the ten properties in the Fort Donelson battlefield core area. Once the developments are finished, land use types would slightly change from passive recreation to low-density recreation. Other land use impacts would be attributed to the increased visitation and associated traffic in the areas. Development of trails at Fort Heiman would lead to more visitors on-site, not just at the roadsides. This could lead to possible

conflicts between visitors and adjacent property owners. Such improvements at the sites could also lead to conflicts with adjacent landowners because visitors might be more tempted to trespass and litter. Adverse impacts such as these may be avoided or minimized if the NPS posts signs on visitor behavior at the sites, and with increased NPS presence or personnel on-site.

Additional heritage tourism and recreational projects could potentially impact land use patterns in the region. The extent of this potential impact would be the intensification of existing land uses (i.e., more intense use of existing structures through renovation and marketing). It is possible that, over the long-term, there would be an increase in commercial use within the area, as the demand for tourism-generated lodging, food and beverage services, and retail increases. However, the expansion of FODO to include Fort Heiman and the eligible battlefield core area properties would only contribute a minor amount to this increased demand.

4.3.6.2 Conclusion

Noteworthy long-term changes in land use would occur as a result of NPS acquisition and management at Fort Heiman and the Fort Donelson battlefield core area properties, as use types change from rural and small-town or low-density residential to passive or low-density recreation. There would also likely be a short-term, localized, minor to moderate, adverse impact on adjacent land values. Over the long-term, the highest and best uses of residential parcels surrounding Fort Heiman could possibly change to commercial. Such a change would pose a risk to the character and ambience of Fort Heiman and the battlefield core area properties. To prevent such risks, the NPS would develop a land protection plan and work with adjacent landowners to identify the impacts land use changes may have on the park's resources.

Alternative B would bring about long-term, negligible, beneficial changes in land use at the Fort Heiman site and the Fort Donelson battlefield core area properties. It would also likely induce short-term, localized, minor to moderate, adverse impact on adjacent land values. If rezoning were to occur, there is a potential for long-term, localized, moderate, beneficial impact on adjacent land values. There is also a potential for long-term, localized, adverse impact on park resources in the event of developments on adjacent lands.

4.3.7 Visual Resources

Under Alternative B, FODO's boundaries would be adjusted to include Fort Heiman and ten eligible properties within the Fort Donelson battlefield core area, which would then be managed by the NPS. The impacts on visual resources associated with this change in management and management activities, would be both beneficial and adverse. Under NPS management, it is likely that some vegetation, including trees, would be removed from some of the sites for cultural resources protection and enhancement of visitor interpretation. For example, it might be worthwhile to remove trees in one location to provide a view of Kentucky Lake, not for a view of the lake per se, but to give the visitor a sense of why Fort Heiman was located where it was – to view and command ship movement along the Tennessee River and subject enemy watercraft to plunging fire. While this would alter the visual quality of these sites, this impact would be

negligible to minor, localized, and both adverse and beneficial, since removing vegetation would enhance the resources at and interpretation of the sites.

Under NPS management, no actions would be taken that would degrade the visual quality of the site or the site's resources. However, enhancements to the properties may be made. In addition, the visual character at some sites may be altered with the development of trails among the various points of interest. However, any such trails would allow visitors to more fully view the historical resources present on the sites, resulting in a potential long-term, beneficial minor impact on visual quality.

Long-term, localized, adverse impacts on visual quality both at Fort Heiman and the battlefield core area properties may result from the increased presence of visitors and associated traffic. This impact would be expected to be negligible to minor in intensity, and would be more of a social impact than one on visual resources.

4.3.7.1 Connected Actions and Cumulative Impacts

Construction activities associated with future NPS developments would adversely affect the visual quality of the immediate area, although only temporarily. The presence of construction workers and equipment on a given site would temporarily degrade visitor experience there, which may limit recreational opportunities and decrease visitor use of the site for the duration of construction. Over the long-term, the visual character at some sites may be altered with the development of trails through the sites. Long-term, localized, negligible to minor adverse impacts on visual quality may result from the increased presence of visitors and associated traffic around Fort Heiman and the battlefield core area properties at Fort Donelson.

Cumulative impacts on visual quality would primarily result from increases in the numbers of tourists and associated traffic in the area. Aside from the general growth in the residential population and size of the area that would be considered residential, no other substantial land use changes are occurring in the immediate region.

4.3.7.2 Conclusion

The increased presence of visitors and traffic would also alter the visual quality around the sites, leading to a long-term, localized, negligible to minor adverse impact on visual quality. However, NPS management of Fort Heiman and the ten eligible properties, and site improvements associated with management and protection of resources at these sites, would result in long-term, minor, beneficial impacts on visual quality.

4.3.8 Human Health and Safety

Under this alternative, the NPS would acquire ownership and undertake management of Fort Heiman and ten eligible battlefield core area properties. Neither the fort's nor the battlefield properties' management would not involve any activities that would pose risks to the health or

safety of the public. On the contrary, beneficial impacts on human health and safety would be expected to result from this alternative.

According to the GMP for Fort Donelson, the NPS would undertake measures to identify hazards and reduce risks to the public on NPS lands. Ranger staffing levels could be increased to allow for more visibility and to provide increased resource monitoring to identify and correct hazardous conditions on NPS lands. Therefore, a long-term, localized, minor beneficial impact on human health and safety at Fort Heiman and the ten eligible properties at Fort Donelson is anticipated to result from this alternative.

As a result of Alternative B, visitation to Fort Heiman and the ten battlefield core area properties would be expected to increase over the current minimal level. Increased visitation may result in an increase in the number of accidents/ incidents occurring at the sites or in the region. However, this increase would not be the result of the management alternative; rather, it would be a natural and proportionate increase due to the increased amount of people in the area. According to NPS Management Policies, the park superintendent would develop and implement a program of emergency preparedness to ensure an effective response to all reasonably foreseeable types of emergency situations. As part of the program, a systematic method for alerting visitors about potential disasters and evacuation procedures would be included. The NPS would also maintain an emergency medical services program to provide appropriate emergency medical services to persons who become ill or injured. This program would include provision of transportation for persons who become sick or injured, as well as emergency pre-hospital care, ranging from first aid to advanced life support, if necessary (NPS, 2001). Thus, NPS management of Fort Heiman and the other battlefield properties under Alternative B would result in a long-term, moderate, localized, beneficial impact on public health and safety.

4.3.8.1 Connected Actions and Cumulative Impacts

Both worker and public health and safety may be impacted during any construction of possible future improvements at Fort Heiman and the battlefield core area properties, due to accidents and access to the construction site. Impacts to public safety during construction could arise if access to the site is possible, especially at night and during hours when construction is not actively occurring. Public safety impacts can be minimized by erecting barricades around the construction site and locking the site at night and during work holidays. Small amounts of solid, sanitary, construction, and vegetative waste would likely be generated by construction activities. Potential future NPS developments would not result in the generation of wastes over the long-term. As with almost any construction project involving the use of heavy equipment, there is some risk of an accidental POL (petroleum, oil, lubricant) spill or unplanned release of some other toxic or hazardous contaminant onto the ground. However, the NPS requires that all employees that would be exposed to hazardous materials be trained and instructed in approved methods for handling and storage of such materials (NPS, 2000d). Therefore, the probability of a spill would be very low. All in all, impacts to human health and safety from the above would be minor.

4.3.8.2 Conclusion

While increased visitation at Fort Heiman and at Fort Donelson's ten eligible battlefield core area properties would likely result in a proportionate increase in the number of accidents or incidents occurring there, this increase would not be the result of the management alternative. Rather, long-term, localized, moderate, beneficial impacts on human health and safety would result from NPS management, due to implementation of programs to protect visitor safety and provision of aid in emergency situations.

5.0 CONSULTATION AND COORDINATION

To ensure that the park and its programs are coordinated with the programs and objectives of state, federal, and local governments and private organizations, it is the park's objective to work with these agencies and organizations during the planning process. Consultation and coordination have occurred with numerous agencies during the preparation of this BAS & EA. Consultation undertaken for compliance with specific laws is discussed below and in Section 6.0 of this BAS & EA. Table 5-1 lists the agencies, organizations, and persons contacted for information, which assisted in identifying issues, developing alternatives, and analyzing impacts of the alternatives.

USFWS, Cookeville Ecological Services Field Office (Tennessee)

The USFWS, Cookeville, Tennessee Ecological Services Field Office was contacted on September 12, 2002 regarding the presence of federally listed threatened, endangered, proposed, or candidate species in Calloway County, Kentucky, and Stewart County, Tennessee as well as potential impacts of the boundary adjustment on such species. This coordination confirmed that lists on the field office's website are indeed current. The Service concurred that the two federally listed species likely to occur on the type of habitat present at Fort Heiman and Fort Henry are the Indiana bat (*Myotis sodalis*) and the gray bat (*Myotis grisescens*), both federally listed as endangered. The USFWS expressed interest in receiving a copy of the current DEA and also indicated that further review would be needed at such time as the NPS proposes specific developments for either fort site. The USFWS was assured that subsequent NEPA documentation would take place at the appropriate time, and if necessary, ESA consultation as well.

State Historic Preservation Offices (Kentucky and Tennessee)

In addition, informal coordination and consultation have been held with both state SHPO's, state Civil War preservation authorities, and officials from Calloway and Stewart county governments.

Table 5-1. Persons and Agencies Contacted

Person Contacted	Agency/Organization
Wally Brians, Environmental Coordinator	U.S. Fish and Wildlife Service, Cookeville, Tennessee Ecological Services Field Office
Sarah Welker	U.S. Fish and Wildlife Service, Cross Creeks National Wildlife Refuge, Tennessee
Richard Hanks, Park Superintendent	U.S. Department of the Interior, National Park Service, Fort Donelson National Battlefield
Jim Jobe, Park Historian	U.S. Department of the Interior, National Park Service, Fort Donelson National Battlefield
Robert Wallace, Chief Ranger	U.S. Department of the Interior, National Park Service, Fort Donelson National Battlefield
Terry Winschel, Park Historian	U.S. Department of the Interior, National Park Service, Vicksburg National Military Park
Dale Phillips, Park Superintendent	U.S. Department of the Interior, National Park Service, George Rogers Clark National Historic Park

William Koning, Park Planner	U.S. Department of the Interior, National Park Service, Denver Service Center
Harlan Unrau, Historian	U.S. Department of the Interior, National Park Service, Denver Service Center
Rich Sussman, Chief of Planning	U.S. Department of the Interior, National Park Service, Southeast Region
David W. Lowe, Historian	U.S. Department of the Interior, National Park Service, Washington Office
Gerald Palushock, Geographic Information Specialist	U.S. Department of the Interior, National Park Service, Washington Office
Jane Winston	U.S. Department of the Interior, National Park Service, Natchez Trace Parkway, Ranger Division
Mike Maddell, Forest Planner	U.S. Department of Agriculture, Forest Service, Land Between the Lakes National Recreation Area
Thomas Fugate, Civil War Sites Coordinator	Kentucky Heritage Council, State Historic Preservation Office
Scott Games, Administrative Specialist	Kentucky Department of Parks
David Foley	Kentucky Transportation Cabinet, Division of Planning
Alan Rucker	Kentucky Transportation Cabinet, Division of Planning
John Jordan, Fiscal Manager	Lake Barkley State Resort Park, Kentucky
Steve Zea, President	West Kentucky Corporation
Janet Coleman	Soil Conservation Districts of Kentucky, Calloway County Conservation District
Fred Prouty, Military Sites Preservation Specialist	Tennessee Historical Commission
Linda McCloud	Tennessee Department of Environmental Conservation
Lee Curtis, Director	Tennessee Department of Tourist Development, Heritage and Community Tourism Development Division, Middle Tennessee Tourism
Mark Herron	Tennessee Department of Labor and Workforce Development, Employment Security Division, Research and Statistics
Edwin C. Noble, Park Manager IV	Tennessee Department of Environment and Conservation, Bureau of State Parks, Paris Landing State Park
Sarah Richards	Civil War Preservation Trust
Jennie Gordon, Executive Assistant	Office of Judge/Executive Larry Elkins, Calloway County, Kentucky
Dawn Gaskin, County Planner & Finance Officer	Calloway County, Kentucky
Verlyn Malcolm, E-911 Coordinator	Calloway County Courthouse, Murray, Kentucky
David G. Wallace, County Executive	Stewart County Executive Office, Dover, Tennessee
Connie W. Brigham, Assessor	Stewart County, Tennessee
Sandy Forrest	Fort Heiman friends group
Harold Lominick	Iuka Battlefield Commission
Kent Geno, Engineer	Cook Coggins Engineers, Incorporated
Claire May, Business Manager	Grand Gulf Military Park
Michael Bailey, Site Curator	Fort Morgan Historic Site
Joann Flirt, Interim Director	Historic Blakely State Park

James Parker, Site Manager	Fort Toulouse/Fort Jackson State Park
Donald Taylor, Site Manager	Bentonville Battleground
Tammy Bangert	Fort Fisher State Park
Brian Dalton	Alamance Battleground
Michael Fraering, Curator	Port Hudson State Historic Site
Beau Boehringer, Public Information Director for Louisiana State Parks	Mansfield State Historic Site
Daniel Brown, Park Manager	Fort McAllister Historic Park
Charles Winchester, Site Manager	Picketts Mill Battlefield State Historic Site
Stacy Standbridge	Jefferson Davis Memorial State Historic Site
Jason Baker	Fort Morris State Historic Site
Mitch Bowman, Executive Director	Virginia Civil War Trails

5.1 PUBLIC INVOLVEMENT

Public involvement during the NEPA process includes, at a minimum, public scoping, public review of the EA, and responses to comments submitted by the public. In accordance with CEQ's regulations for implementing NEPA (40 CFR 1506.6), the NPS has involved the interested and affected public during the preparation of this BAS & EA.

The purpose of the scoping process is to determine the scope of issues to be addressed in the EA and to identify significant issues relating to the Proposed Action. Scoping is required for all EA's prepared by the NPS.

A copy of this Draft BAS & EA was sent to all persons who requested a copy during the scoping process, as well as to other pertinent agencies and individuals potentially affected by the Proposed Action. This Draft BAS & EA will be available for public review for a minimum of 30 days. During this public review period, written comments on the BAS & EA are invited from the public and interested agencies. All comments received on the Draft BAS & EA will be reviewed by multiple parties, and appropriate responses will be prepared.

The evaluation of Forts Heiman and Henry actually began as a part of the Vicksburg Campaign Trail project that Congress authorized in November 2000. In the context of that study, public meetings were held in Dover, Tennessee and Murray, Kentucky, on May 29, 2002 to discuss possibilities for a variety of sites in western Kentucky and northern Tennessee. Approximately 110 people attended these meetings. Most of the interest at that time focused on the need to provide some protection to Fort Heiman. As a partial response to the intense interest demonstrated for Fort Heiman, this Boundary Adjustment Study and Environmental Assessment was initiated independent of the Vicksburg Campaign Trail project. Once the independent Fort Heiman study was underway, a follow-up meeting was held in Dover, Tennessee, on June 27, 2002 to allow public expression of further input on Fort Heiman and the ten eligible properties within the battlefield core area, and to provide information about the intent of the BAS & EA. About 40 people attended this meeting at the Stewart County Public Library (Figure 5-1).



Figure 5-1. Attendees at June 27, 2002 scoping meeting in Dover, Tennessee

A scoping postcard was mailed out requesting public participation in the meeting (Appendix D). An informal presentation was given by representatives of the NPS Denver Service Center (DSO), which described the purpose of the boundary adjustment study, the planning process for determining which properties are suitable for inclusion into the national park system, and management alternatives to be addressed in the BAS & EA. NPS representatives from DSO and FODO were also present to answer any questions and address concerns relating to the proposed action. The public was given a chance to express concerns and provide information about the proposed action.

5.2 PUBLIC SCOPING RESPONSE

The ideas, concerns, questions, and issues raised at the scoping meetings for this BAS & EA are summarized below:

Dover, Tennessee, Dover Public Library, 9:00 AM, May 29, 2002

1. Comment/Question: The state of Tennessee has been designated a national heritage corridor area. How will the Vicksburg study partner with the state?

NPS Response: Among other things, the National Park Service stated that it would enhance publicity efforts to make people aware of such designations.

2. Comment/Question: How can local groups demonstrate and provide support for the Vicksburg study?

NPS Response: Local groups can contact parks and state historic preservation offices, provide names of potential partners, provide lists of sites to be evaluated, and provide recommendations for preservation and interpretation, etc.

3. Comment/Question: Are funds available for land acquisition? Is the Park Service only looking at battlefields?

NPS Response: NPS is looking at a broad spectrum of historic sites associated with the Vicksburg Campaign.

4. Comment/Question: Is the NPS interested in looking at historic sites associated with the local iron industry during the Civil War?

NPS Response: NPS is interested in looking at a broad spectrum of historic battlefield and non-battlefield sites associated with the Vicksburg Campaign. Site-specific information regarding such sites should be provided to the agency.

5. Comment/Question: Federal land acquisition has bad connotations in the local area. Based on past experiences with various agencies, local citizens are concerned about a Federal takeover. How will the Park Service deal with this issue?

NPS Response: NPS is interested in a broad spectrum of partnerships with local, state, and private entities and organizations. NPS will not undertake land condemnation procedures. Any Federal land acquisition would only be undertaken with willing sellers.

6. Comment/Question: Friends of Fort Donelson want to support the whole story of the fort (as well as Forts Henry and Heiman) during the Civil War.

NPS Response: Such questions will be addressed in boundary adjustment study.

7. Comment/Question: Can the Johnsonville Raid historic site be included in the Vicksburg Campaign Trail study?

NPS Response: NPS is limited by the feasibility study's enabling legislation in terms of the sites that it can investigate and evaluate. However, the Vicksburg study can make recommendations regarding other sites. It was noted that the commencement of the Johnsonville Raid could be interpreted at Fort Heiman.

8. Comment/Question: What about sites that will be recommended for inclusion in the national park system?

NPS Response: NPS will prepare suitability and feasibility evaluations/analyses for such sites under criteria set forth in its Management Policies.

Murray, Kentucky, Murray State University, 1:00 PM, May 29, 2002

1. Comment/Question: Can Fort Heiman/Johnsonville be included in the Vicksburg study?

NPS Response: NPS is limited by the feasibility study's enabling legislation in terms of the sites that it can investigate and evaluate. However, the Vicksburg study can make recommendations regarding other sites. It was noted that the commencement of the Johnsonville Raid could be interpreted at Fort Heiman, although the Vicksburg study would focus on the fort's relationship to the Federal penetration up the Tennessee and Cumberland rivers during February 1862.

2. Comment/Question: What is the NPS going to do with the NPS-USFS cooperative agreement regarding Fort Henry?

NPS Response: Such questions will be addressed in the boundary adjustment study.

3. Comment/Question: Island No. 10 should be included in the Vicksburg study.

NPS Response: The Island No. 10 site is no longer extant but could be interpreted at Columbus, Kentucky.

4. Comment/Question: Numerous comments by individuals and representatives of organizations voiced support on behalf of the significance of, and need for, acquisition, preservation, interpretation, and inclusion of Fort Heiman in the national park system. Issues relating to Fort Heiman – pending legislation, status of lands, funding sources, threats to historic resources – were topics of open discussion.

NPS Response: Such questions and issues will be addressed in the boundary adjustment study.

5. Comment/Question: Pending congressional legislation regarding Forts Henry and Heiman and Paducah was discussed.

NPS Response: Questions and issues relating to Forts Henry and Heiman will be addressed in the boundary adjustment study.

6. Comment/Question: What is the status of the technical correction currently before Congress regarding Kentucky and the Vicksburg Campaign study?

NPS Response: Current status was clarified.

7. Comment/Question: Tom Fugate (representative of the Kentucky SHPO) clarified his initial recommendations for historic sites and significance tiering of sites in Kentucky for consideration in the Vicksburg study.

NPS Response: NPS acknowledged receipt of Fugate's clarifications.

8. Comment/Question: What are the issues relating to Fort Henry?

NPS Response: NPS acknowledged clarifications provided by some attendees and indicated that questions and issues relating to Fort Henry will be addressed in the boundary adjustment study.

9. Comment/Question: What happens after the Vicksburg study is completed? What about funding issues after the Vicksburg study is completed?

NPS Response: Vicksburg study will identify funding sources that could be tapped for preservation and interpretation of historic sites associated with the Vicksburg Campaign. Potential partnerships for site management will also be explored in the study.

10. Comment/Question: The Paducah hospital site has been ravaged recently. There is growing concern that the Confederate Civil War story is being lost.

NPS Response: NPS acknowledged concern and indicated that such issues will be addressed in Vicksburg study.

11. Comment/Question: Historic sites have significance because of their relationship to historic events. Historic sites also have profound personal meaning for people that transcends politics.

NPS Response: NPS acknowledged concern.

Dover, Tennessee, Dover Public Library, 3:00 PM, June 27, 2002

1. Comment/Question: What about Fort Henry? How will it be managed to tell the entire story of Forts Heiman, Henry, and Donelson?

NPS Response: Questions and issues relating to Fort Henry will be addressed in the boundary adjustment study.

2. Comment/Question: Attendee reported that \$150,000 is currently available from the Commonwealth of Kentucky and the principal landowner to purchase the Fort Heiman property - \$60,000 is available from the Land and Water Conservation Fund.

NPS Response: NPS acknowledged receipt of the information.

3. Comment/Question: Further discussion of funds available to purchase the Fort Heiman property ensued.

NPS Response: NPS acknowledged receipt of information.

4. Comment/Question: Stewart County official stated that he believes the inclusion of Fort Heiman in the national park system is “great” – inclusion would provide many benefits to the county, among them being heritage tourism dollars.

NPS Response: NPS acknowledged receipt of information.

5. Comment/Question: Attendee noted that “everybody” is in favor of inclusion of Fort Heiman in the national park system – school children, people in Calloway County, Kentucky, etc.

NPS Response: NPS acknowledged receipt of information.

6. Comment/Question: History of Fort Heiman is important in and of itself aside from economic benefits associated with its inclusion in the national park system.

NPS Response: NPS acknowledged receipt of information.

7. Comment/Question: Fred Prouty, representative of the Tennessee Historical Commission, reported on State of Tennessee plans to construct a trail from Shiloh National Military Park to Fort Donelson National Battlefield and efforts to construct a museum at Johnsonville and retrieve submerged vessels in the Tennessee River at that historic site. He also reported on the state’s efforts to purchase land and enhance interpretation at Parker’s Cross Roads Battlefield.

NPS Response: NPS acknowledged receipt of information.

8. Comment/Question: It was noted that Fort Heiman was the base from which the 1864 Johnsonville Raid was staged.

NPS Response: NPS acknowledged receipt of information.

9. Comment/Question: Historic iron industry sites in Stewart County should be preserved and interpreted.

NPS Response: NPS acknowledged receipt of information and recommended that site-specific information be provided to the agency.

10. Comment/Question: Representative of West Kentucky Corporation reported on that organization’s efforts to establish a tourism-related website for Forts Heiman, Henry, and Donelson.

NPS Response: NPS acknowledged receipt of information.

11. Comment/Question: What is the status of the subdivision of the lands on which historic Fort Heiman is located? Attendee reported that: 25 of the 47 subdivided lots have been sold; the last

lot to be sold was sold in 1995; and principal landowner has indicated that he will not sell any more lots until he knows what is going on with the Fort Heiman preservation efforts.

NPS Response: NPS acknowledged receipt of the information.

12. Comment/Question: Each of the three forts is historically significant in and of themselves; the combination of the three forts elevates their significance to a higher level.

NPS Response: NPS acknowledged receipt of information.

13. Comment/Question: Only the NPS has the capability and resources to manage the preservation and interpretation of the three forts correctly.

NPS Response: NPS acknowledged receipt of information.

14. Comment/Question: What is involved with a boundary adjustment study?

NPS Response: The rationale and process involved with boundary adjustment studies was explained. Where the process goes from here was also explained.

15. Comment/Question: Local residents could acquire the Fort Heiman property even though Congress has yet to pass legislation authorizing inclusion of Fort Heiman in the national park system. It was noted that Congressman Ed Whitfield would soon introduce a bill to authorize inclusion of Fort Heiman in the system.

NPS Response: NPS acknowledged receipt of the information.

16. Comment/Question: Does the proposed/potential legislation also address Fort Donelson boundary issues?

NPS Response: NPS indicated that it did not know what provisions would be inserted in the proposed/potential legislation.

17. Comment/Question: What is the total acreage of the property on which the extant resources associated with Fort Heiman are located?

NPS Response: NPS had no information on the subject. However, an attendee stated that the total acreage was about 186 – 20.3 acres of which have been subdivided and about 166 acres of which have not been subdivided.

18. Comment/Question: Historic significance of three forts is that their fall in February 1862 provided the Union Army with an open gate to the Deep South – their fall had a significant impact on the outcome of the Civil War.

NPS Response: NPS acknowledged receipt of information.

19. Comment/Question: There have been numerous local newspaper and periodical articles supporting the inclusion of Fort Heiman in the national park system.

NPS Response: NPS acknowledged receipt of information.

20. Comment/Question: Area residents should contact the Governor of Kentucky regarding the allocation of TEA-21 funds for acquisition of Fort Heiman property – disposition of such funds should be known within one month.

NPS Response: NPS made no response.

6.0 COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The following laws and associated regulations provided guidance for the development of this BAS & EA, the design of the alternatives, the analysis of impacts, and the creation of mitigation measures to be implemented as part of the Proposed Action. Summaries of the following laws, as well as a complete list and description of environmental laws and regulations relevant to the project, are provided in Appendix C of this BAS & EA.

National Environmental Policy Act of 1969 (NEPA) (42 USC 4321-4370):

This Act requires Federal agencies to evaluate the environmental impacts of their actions and to integrate such evaluations into their decision-making processes. Implementing regulations for NEPA are contained in 40 CFR 1500 through 1508. This EA was prepared in accordance with NEPA and its implementing regulations.

Endangered Species Act of 1973, as amended (ESA) (16 USC 1531-1544):

Section 7 of the ESA requires that a Federal agency consult with the USFWS or the National Marine Fisheries Service on any action that may affect endangered, threatened, or candidate species, or that may result in adverse modifications of critical habitat. Implementing regulations that describe procedures for interagency cooperation and consultation with regards to effects on threatened, endangered, or proposed species are contained in 50 CFR 402. The Cookeville, Tennessee Ecological Services Field Office was contacted on September 12, 2002 regarding the presence of federally listed threatened, endangered, proposed, or candidate species in Calloway County, Kentucky and Stewart County, Tennessee. This coordination, and information on the field office's web site, revealed that there are currently four federally listed species occurring in Calloway County and six in Stewart County. Of these species, only two, the Indiana bat (*Myotis sodalis*) and the gray bat (*M. grisescens*), both federally listed as endangered, have much likelihood of occurring in the habitat present at either Fort Heiman or the ten eligible properties.

Potential impacts on these species as a result of boundary adjustment at Fort Donelson National Battlefield, and NPS management of Fort Heiman and the battlefield core area properties, have been evaluated in this BAS & EA. In addition, potential impacts on these species that should be considered in subsequent NEPA documentation on future NPS developments on either fort site have also been discussed in this BAS & EA. Once a management alternative is selected and plans for development are more fully refined, informal consultation with the USFWS will be conducted regarding the developments and impacts on special concern species.

Clean Air Act (CAA) (42 USC 7401 et seq.):

This Act establishes pollutant standards to protect and enhance the nation's air quality to promote public health and welfare. These standards, known as the National Ambient Air Quality

Standards (NAAQS), define the concentrations of these pollutants that are allowable in air to which the general public is exposed. This EA presents an analysis of the potential impacts on air quality resulting from each of the alternatives. No additional compliance activities are anticipated for this project with respect to the CAA. In addition, potential impacts on air quality that should be considered in subsequent NEPA documentation on future NPS developments on either Fort Heiman or the ten eligible battlefield core area properties have also been discussed in this EA. Once a management alternative is selected and plans for development are more fully refined, CAA compliance activities will be reexamined, and levels of criteria pollutant emissions associated with these developments will be estimated and analyzed against the *de minimus* threshold for each pollutant.

Clean Water Act of 1972 (CWA) (33 USC 1251 et seq.):

The purpose of this Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA regulates the discharge of pollutants, including dredged or fill material, into navigable waters of the U.S., including wetlands, through a permit system jointly administered by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE). Actions discussed in this BAS & EA comply with the requirements of Section 404 of the CWA and all other applicable Federal, State, and local agencies. There are few, if any, jurisdictional wetlands present at either Fort Heiman or the ten battlefield core area properties, and these will not be affected by any of the management alternatives considered in the BAS & EA. In addition, potential impacts on water resources, including wetlands, that should be considered in subsequent NEPA documentation on future NPS developments at any of the prospective sites, have also been discussed in this BAS & EA. It is NPS policy to take all necessary actions to maintain and/or restore surface and ground water quality within its parks consistent with the CWA and all other applicable Federal, State, and local laws and regulations.

National Historic Preservation Act of 1966, as amended (NHPA) (16 USC 470 et seq.):

Section 106 of the NHPA requires Federal agencies to consider the effects of their proposals on properties listed or eligible for listing in the National Register of Historic Places (NRHP). Both Fort Heiman and Fort Henry are listed on the NRHP. Section 106 also directs Federal agencies to provide the state historic preservation officer (SHPO), tribal historic preservation officers, and, as appropriate, the Advisory Council on Historic Preservation (ACHP), a reasonable opportunity to review and comment on these proposals.

The NPS has consulted with the Kentucky and Tennessee SHPOs informally throughout the project's history. Civil War preservation authorities from both states have been involved throughout the process. Additionally, copies of this BAS & EA will be sent to the Kentucky Heritage Council and the Tennessee Historical Commission, to be reviewed by the respective SHPOs.

NPS management of Forts Heiman and the ten eligible core area properties as part of Fort Donelson National Battlefield would have beneficial impacts on cultural resources, and enhance the current level of cultural resource protection and preservation on these properties.

Potential impacts on cultural resources that should be considered in subsequent NEPA documentation on future NPS developments on Fort Heiman and the core area properties have also been discussed in this EA. Once a management alternative is selected and plans for development are more fully refined, the NPS will consult with the SHPOs, as necessary, regarding these developments and impacts on cultural resources. All ground-disturbing activities would be reviewed for archaeological needs. Completion of compliance with Section 106 of the NHPA would be carried out in accordance with the NPS Cultural Resources Management Handbook, issued pursuant to Director's Order #28, and appropriate documentation and consultations undertaken. In addition, it is likely that the NPS will require the use of an archaeological monitor during initial land grading activities associated with these developments to protect any yet-undiscovered resources that might be on the national battlefield.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations:

This executive order requires Federal agencies to assess whether their actions have disproportionately high and adverse human health or environmental effects on minority and low-income populations. Low-income or minority populations are not disproportionately represented either in Calloway or Stewart counties as a whole, or in the immediate vicinities of Forts Heiman and the eligible core area properties. Thus, neither low-income nor minority citizens would experience disproportionate adverse impacts as a result of the expansion of Fort Donelson to include Fort Heiman and ten eligible properties, and management of these properties by the NPS. Expansion of FODO would allow for greater resource protection and preservation, increased recreational opportunities, and enhanced visitor experience. These beneficial impacts would be experienced by the community as a whole, including low-income and minority populations. Increased recreational and educational opportunities and enhanced visitor experiences would be available to all residents, regardless of income or race. Any adverse impacts resulting from the project would affect all populations, and would not disproportionately affect low-income persons or minority groups.

Executive Order 11990, Protection of Wetlands:

This executive order directs the NPS to avoid, to the extent possible, the long- and short-term adverse impacts associated with modifying or occupying wetlands, and requires Federal agencies to follow avoidance, mitigation, and preservation procedures regarding wetlands with public input before proposing new construction projects. Neither Fort Heiman nor the core area properties appears to contain more than negligible amounts of jurisdictional wetlands. NPS management of these properties would provide for enhanced protection and preservation of any wetlands that may be present on the property, as well as compensation for any impacts or losses of these wetlands.

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8.0 LIST OF PREPARERS

The following people contributed to the preparation of this BAS & EA:

NATIONAL PARK SERVICE

Fort Donelson National Battlefield

Richard Hanks, Superintendent

Jim Jobe, Park Historian

Robert Wallace, Chief Ranger

Vicksburg National Military Park

Terry Winschel, Park Historian

Shiloh National Military Park

Stacy D. Allen, Park Historian

George Rogers Clark National Historical Park

Dale Phillips, Superintendent

Southeast Region

Rich Sussman, Chief of Planning

David Libman, Planner

Washington Office

David W. Lowe, Historian

Gerald Palushock, Geographic Information Specialist

Denver Service Center

Bill Koning, Park Planner

Harlan Unrau, Historian

STATE OF TENNESSEE

Fred M. Prouty, Director of Programs, Tennessee Wars Commission

COMMONWEALTH OF KENTUCKY

Tom Fugate, Coordinator, Kentucky Civil War Sites Preservation Program

U.S. FOREST SERVICE

Mike Madell, Forest Planner, Land Between the Lakes National Recreation Area

MANGI ENVIRONMENTAL GROUP

Leon Kolankiewicz, Project Manager

Robin Olsen, Environmental Analyst

Rebecca Whitney, Geographic Information Specialist

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APPENDIX A

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

AA	Antiquities Act
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AI	Appraisal Institute
ARPA	Archaeological Resources Protection Act
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
CWGN	Civil War General News
CWPT	Civil War Preservation Trust
DOD	Department of Defense
DOI	Department of the Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FODO	Fort Donelson National Battlefield
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GIS	Geographic Information Systems
GMP	General Management Plan
GPS	Global Position System
HAS	Historic Sites Act
HUD	Department of Housing and Urban Development
IMPLAN	Impact Analysis for Planning
IRS	Internal Revenue Service
ISTEA	Intermodal Surface Transportation Efficiency Act
KY	Kentucky
LBL	Land Between the Lakes National Recreation Area
LOS	Level of Service
mph	Miles Per Hour
MTSU	Middle Tennessee State University
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHL	National Historic Landmark

NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NJHT	New Jersey Historic Trust
NMP	National Military Park
NO _x	Nitrogen Oxides
NPS	National Park Service
NPWRC	Northern Prairie Wildlife Research Center
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
ODTT	Ohio Division of Travel and Tourism
ORV	Off-road Vehicle
PAVA	Preservation Alliance of Virginia
Pb	Lead
PILT	Payment In Lieu Of Taxes
P.L.	Public Law
PM10	Particulate Matter less than 10 microns in diameter
POL	Petroleum, Oils, and Lubricants
RCRA	Resource Conservation and Recovery Act
RV	Recreational Vehicle
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SO ₂	Sulfur Dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SRS	Special Resource Study
STR	Smith Travel Research
SWMP	Solid Waste Management Plan
TAPP	Tourism and Preservation Partnership
TDEC	Tennessee Department of Environment and Conservation
TDECD	Tennessee Department of Economic and Community Development
TDH	Tennessee Department of Health
TDOT	Tennessee Department of Transportation
TN	Tennessee
TNVS	Tennessee Civil War Site Visitation Statistics
TRB	Transportation Research Board
TVA	Tennessee Valley Authority
UMTRI	University of Michigan Transportation Research Institute
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VERP	Visitor Experience and Resource Protection
VOCs	Volatile Organic Compounds

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APPENDIX B

GLOSSARY

GLOSSARY

A-weighted Decibel (dBA): The A-scale sound level is a quantity, in decibels, read from a standard sound-level meter with A-weighting circuitry. The A-scale weighting discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear. The A-scale sound level measures approximately the relative “noisiness” or “annoyance” of many common sounds.

Alluvium: Material transported and deposited on land by flowing water, such as clay, silt, and sand.

Ambient Air: Any unconfined portion of the atmosphere; open air, surrounding air.

Ambient Air Quality Standards: Standards established on a State or Federal level that define the limits for airborne concentrations of designated “criteria” pollutants (e.g., nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter, ozone, lead) to protect public health with an adequate margin of safety (primary standards) and to protect public welfare, including plant and animal life, visibility, and materials (secondary standards).

Archaeological Resources: Any material of human life or activities that is at least 100 years old, and that is of archaeological interest.

Arterial Road: A roadway that provides the highest level of service at the greatest speed for the longest uninterrupted distance with some degree of access control.

Attainment Area: An area considered to have air quality as good as or better than the National Ambient Air Quality Standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

Average Annual Daily Traffic (AADT): Traffic volume reported as the daily number of vehicles in both directions on a segment of roadway, averaged over one full calendar year.

Best Management Practice (BMP): A practice or combination of practices chosen as the most effective, economical, and practical means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with State and local water quality goals. Selection of appropriate BMPs depends largely upon the conditions of the site, such as land use, topography, slope, water table elevation, and geology.

Census Tract: A small, relatively permanent statistical subdivisions of a county. It contains between 2,500 and 8,000 persons and, when first delineated, is designed to be homogeneous with respect to population characteristics, economic status, and living conditions.

Climax Vegetation: Climax vegetation is the structure and species composition that a particular floral community in a given ecosystem or biome (large-scale plant communities) will tend

toward via the successional process in the absence of disturbances such as fire, major disease or insect infestations, clearing, or logging.

Collector Road: A roadway that provides a less highly developed level of service at a lower speed for shorter distances by collecting traffic from local roads and connecting them with arterial roads.

Consumer Price Index (CPI): A measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. Published monthly by the Bureau of Labor Statistics, the CPI is calculated for the nation, by region, and for some urban areas.

Cultural Resources: Any building, site, district, structure, object, data, or other material significant in history, architecture, archeology, or culture. Cultural resources include: historic properties as defined in the National Historic Preservation Act (NHPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archeological resources as defined in the Archeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access To "Indian Sacred Sites,"* to which access is provided under the American Indian Religious Freedom Act (AIRFA), and collections.

Cumulative Impacts: Impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (Federal or non-Federal) or person undertakes such other actions; effects resulting from individually minor, but collectively significant, actions taking place over a period of time.

Decibels (dB): The unit of measurement of sound level calculated by taking ten times the common logarithm of the ratio of the magnitude of the particular sound pressure to the standard reference sound pressure of 20 micropascals and its derivatives.

Deciduous: Shedding leaves annually.

Demography: The statistical science dealing with the distribution, density, vital statistics, etc. of populations.

Direct Effects (Economics): Economic impact of the initial purchase of a final product.

Economic Impact Model: An assessment of change in overall economic activity as a result of some change in one or several economic activities.

Endangered Species: A species that is threatened with extinction throughout all or a significant portion of its range.

Floodplain: The lowlands and relatively flat areas adjoining inland waters, including flood prone areas, which are inundated by a flood. The “100-year floodplain” refers to a floodplain that is subject to a one percent or greater chance of flooding in any given year from any source.

Fragipan: A loamy, brittle, seemingly cemented, subsurface horizon that is very low in organic matter and clay, but rich in silt or very fine sand. The layer is slowly or very slowly permeable to water, and ranges from a few inches to several feet thick.

Fugitive Dust: Particulate matter composed of soil, uncontaminated from pollutants, resulting from industrial activity. Fugitive dust may include emissions from haul roads, wind erosion of exposed soil surfaces, and other activities in which soil is either moved or redistributed.

Groundwater: Water in the porous rocks and soils of the earth’s crust; a large proportion of the total supply of fresh water.

Heritage Tourism: Traveling to experience the places and activities that authentically represent the stories and people of the past.

Historic Property: As defined by the NHPA, a historic property or historic resource is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of traditional religious and cultural importance (traditional cultural properties), which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an Indian tribe or Native Hawaiian organization.

Indirect Effects (Economics): Changes in inter-industry purchases as a result of initial purchase of a final product.

Induced Effects: Economic impact due to changes in spending by households due to income changes from changes in the production of goods and services.

Intermittent Stream: A stream which flows only at certain times of the year when it receives water from springs or from some surface sources.

Land Grading: Reshaping the ground surface to a planned elevation and/or slope.

Level of Service (LOS): Rating for a roadway, defined by a range of traffic volume to roadway capacity, that is used to express performance of a roadway segment.

Loam: A soil material which contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Local Roads: All roads not defined as arterials or collectors. Local roads primarily provide access to land with little or no through movement.

Loess: Geological deposits of fairly uniform, fine material, mostly silt, that is presumably transported by wind.

Low-Density Recreation: Low-density recreation refers to recreational activities requiring a minimal level of facilities. These may include parking lots, restrooms, and interpretive signage. Some interaction with other persons occurs.

Median Income: The amount which divides the income distribution of a given area into two equal groups, half having incomes above the median, half having incomes below the median.

Mitigation: A method or action to reduce or eliminate adverse program impacts.

Municipal: Belonging to a corporation or city.

Municipal Solid Waste Landfill (Mississippi): A discrete area of land or an excavation that receives household waste (including ash from a municipal solid waste combustion facility) and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR Part 257.2. A Municipal Solid Waste Landfill unit also may receive other types of Resource Conservation and Recovery Act Subtitle D wastes, such as commercial solid waste, non-hazardous sludge, small quantity generator waste, and industrial solid waste.

National Historic Landmark (NHL): A special type of historic property designated because of its national importance in American history, architecture, archaeology, engineering, or culture. Section 800.10 of the Advisory Council on Historic Preservation's regulations (36 CFR 800), as well as Section 110(f) of the National Historic Preservation Act, specify special protections for NHLs.

Nonattainment Area: An area that has been designated by the U.S. Environmental Protection Agency and the appropriate state air quality agency as exceeding one or more National Ambient Air Quality Standards.

Nonpoint Source: A pollution source which comes from diffuse sources, such as land runoff, precipitation, atmospheric deposition, or percolation.

Parent Material: Disintegrated and partly weathered rock from which soils are formed.

Passive Recreation: Passive recreation refers to non-consumptive activities such as wildlife watching, hiking, walking, biking and canoeing. On-site facilities are non-existent or minimal. There is little interaction with other persons.

Permanent/Perennial Stream: A stream that flows throughout the year.

Plottage/Assemblage: The increment of value that results when two or more sites are combined to produce greater utility. The term is typically applied to real estate.

Poverty: Per the Office of Management and Budget's Directive 14, the U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to detect who is poor. If a family's income is less than the threshold for that family, then that family, and every individual in it, is considered poor. Poverty thresholds do not vary geographically; however, they are updated annually for inflation with the Consumer Price Index. The official poverty definition counts money income before taxes and excludes capital gains and noncash benefits, such as housing, Medicaid, and food stamps.

Prime Farmland: Soils best suited to producing food, feed, forage, fiber, and oilseed crops; favorable for economic production of sustained high yields of crops.

Recreational Carrying Capacity: A prescribed number and type of people that an area will accommodate given the desired natural/cultural resource conditions, visitor experiences, and management program.

Runoff: Non-infiltrating water entering a stream or other conveyance channel shortly after a rainfall.

Silt: Fine sediment suspended in stagnant water or carried by moving water, that often accumulates on the bottom of rivers.

Soil Association: A landscape, named for its major soil types, that has a distinctive proportional pattern of soils, generally consisting of one or more major soils and at least one minor soil type.

Soil Erosion: The removal and loss of soil by the action of water, ice, gravity, or wind.

Soil Series: A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All soils of a series have horizons that are similar in composition, thickness, and arrangement.

Solid Waste: Any refuse, including discarded recyclable materials, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and any other discarded materials, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, and agricultural operations, and community activities. Solid waste does not include solid or dissolved materials in domestic sewage or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act, as amended, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended.

State Historic Preservation Officer (SHPO): The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the NHPA.

Threatened Species: A species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Visit: One person visiting a site or area for recreation purposes for any period of time.

Wetlands: Areas that are inundated or saturated with surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil, including swamps, marshes, bogs, and other similar areas.

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APPENDIX C

ENVIRONMENTAL LAWS AND REGULATIONS

Relevant Laws and Regulations	Summary	Affected Resource(s)
The National Environmental Policy Act (NEPA) (42 USC 4321-4370)	Requires Federal agencies to evaluate the environmental impacts of their actions and to integrate such evaluations into their decision-making processes.	All
Council on Environmental Quality (CEQ) Regulations	These regulations (40 CFR 1500-1508) implement NEPA and establish two different levels of environmental analysis: the environmental assessment (EA) and the environmental impact statement (EIS). An EA determines whether significant impacts may result from a proposed action. If significant impacts are identified, an EIS is required to provide the public with a detailed analysis of alternative actions, their impacts, and mitigation measures, if necessary.	All
The Clean Water Act (CWA) (33 USC 1251 et seq.)	Section 401, the state water quality certification process, gives states the authority to grant, deny, or condition the issuance of Federal permits that may result in a discharge to the waters of the United States based on compliance with water quality standards. Section 404 regulates the discharge of pollutants, including dredged or fill material, into navigable waters of the U.S. through a permit system jointly administered by the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE). Nonpoint sources requirements control pesticide runoff, forestry operations, and parking lots/motor pools. Point sources require individual or group permits and must be monitored at the point at which they enter public waters, storm sewers, or natural waterways. Section 311 (j) requires facilities to prepare a Spill Prevention Control and Countermeasure Plan, containing minimum prevention facilities, restraints against drainage, an oil spill contingency plan, etc.	Water Resources, Biological Resources
The Clean Air Act (CAA) (42 USC 7401 et seq.)	Among its varied provisions, the CAA establishes standards for air quality in regard to the pollutants generated by internal combustion engines. These standards, known as the National Ambient Air Quality Standards (NAAQS), define the concentrations of these pollutants that are allowable in air to which the general public is exposed ("ambient air").	Air Quality
The Endangered Species Act (ESA) (16 USC 1531-1544)	Prohibits the harming of any species listed by the U. S. Fish and Wildlife Service (USFWS) as being either Threatened or Endangered. Harming such species includes not only directly injuring or killing them, but also disrupting the habitat on which they depend.	Biological Resources

Relevant Laws and Regulations	Summary	Affected Resource(s)
Migratory Bird Treaty Act (16 USC 703 et seq.)	Restricts the taking, possession, transportation, sale, purchase, importation, and exportation of migratory birds through permits issued by the USFWS.	Biological Resources
National Emissions Standards for Hazardous Air Pollutants (NESHAP)	Places standards on all hazardous air pollutants and governs such areas as organic liquids, asbestos, polyurethane foam, and wastewater. NESHAP is implemented under U.S. EPA jurisdiction.	Air Quality, Waste Management
The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978 (42 USC 4901 et seq.)	Requires compliance with State and local noise laws and ordinances.	Noise, Human Health and Safety
Archaeological Resources Protection Act (ARPA) (16 USC 470a et seq.)	Ensures the protection and preservation of archeological resources on Federal lands.	Cultural Resources
National Historic Preservation Act (NHPA) (16 USC 470 et seq.)	Provides the framework for Federal review and protection of cultural resources, and ensures that they are considered during Federal project planning and execution. The implementing regulations for the Section 106 process (36 CFR Part 800) have been developed by the Advisory Council on Historic Preservation (ACHP). The Secretary of the Interior maintains a National Register of Historic Places (NRHP) and sets forth significance criteria for inclusion in the register. Cultural resources included in the NRHP, or determined eligible for inclusion, are considered "historic properties" for the purposes of consideration by Federal undertakings.	Cultural Resources
Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.)	Protects Native American human remains, burials, and associated burial goods.	Cultural Resources
Historic Sites Act (HSA) (16 USC 461 et seq.)	Authorizes the establishment of national historic sites, the preservation of areas of national interest, and the designation and the preservation of national historic landmarks (NHLs). Provides procedures for designation, acquisition, administration, and protection of such sites.	All
Antiquities Act (AA) (16 USC 431 et seq.)	Authorizes the President to designate as national monuments any historic landmarks and historic and prehistoric sites, structures, and objects situated on Federal land. Establishes the requirement of a permit for the examination or excavation of such nationally important sites and establishes penalties for their destruction.	Cultural Resources

Relevant Laws and Regulations	Summary	Affected Resource(s)
Safe Drinking Water Act (SDWA) (42 USC 300 et seq.)	Provides for the safety of drinking water throughout the U.S. by establishing and enforcing national drinking water quality standards. Protects public health by establishing safe limits (maximum containment limits) for contaminants based upon the quality of water at the tap, and prevents contamination of surface and ground sources of drinking water. The U.S. EPA is responsible for establishing the national standards; the States are responsible for enforcement of the standards	Water Resources/ Quality; Human Health & Safety
Rivers and Harbors Appropriation Act of 1899 (33 USC 401 et seq.)	Prohibits the unauthorized obstruction or alteration of any navigable water of the U.S., construction in or over a navigable water, excavation of or dumping of materials into a navigable water, or conducting any project that would alter the course or capacity of navigable water unless it has been recommended by the USACE.	Water Resources
Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)	Regulates all aspects of the handling of hazardous waste through RCRA permits issued by the U.S. EPA.	Hazardous Materials
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 9601 et seq.)	Provided broad Federal authority to respond directly to releases of hazardous materials that may endanger public health or the environment. Established prohibitions and requirements pertaining to closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when a responsible party cannot be identified.	Hazardous Materials
National Park Service Organic Act of 1916 (16 USC et seq.)	Established the National Park Service to manage national parks for the purposes of conserving the scenery, natural resources, historic objects, and wildlife within the parks, and providing for the enjoyment these resources in such manner that will leave them unimpaired for the enjoyment of future generations.	All
Federal Land Policy and Management Act (43 USC et seq.)	Declares that all public lands will be retained in federal ownership unless it is determined that a use other than public will better serve the interests of the nation. Requires that all public land be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, and environmental aspects of the land. Requires that all public lands and their resources be inventoried periodically and systematically.	All
Executive Order 11514: Protection and Enhancement of Environmental Quality	Provides leadership for protecting and enhancing the quality of the Nation's environment to sustain and enrich human life.	All

Relevant Laws and Regulations	Summary	Affected Resource(s)
Executive Order 11593: Protection and Enhancement of the Cultural Environment	Provides leadership for protecting, enhancing, and maintaining the quality of the Nation's historic and cultural environment.	Cultural Resources
Executive Order 12372: Intergovernmental Review of Federal Programs	Directs Federal agencies to consult with and solicit comments from state and local government officials whose jurisdictions would be affected by Federal actions.	All
Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	Requires Federal actions to achieve Environmental Justice by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.	All
Executive Order 13007: Protection and Accommodation of Access To "Indian Sacred Sites"	Directs Federal agencies to consider Indian sacred sites in planning agency activities.	Cultural Resources
Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks	Requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children.	All
Executive Order 11990: Protection of Wetlands	An overall wetlands policy for all agencies managing Federal lands, sponsoring Federal projects, or providing Federal funds to State or local projects. It requires Federal agencies to follow avoidance/mitigation/preservation procedures with public input before proposing new construction projects.	Water Resources, Biological Resources
Executive Order 11988: Floodplain Management	Requires all Federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. Because many wetlands are located in floodplains, Executive Order 11988 has the secondary effect of protecting wetlands.	Water Resources, Biological Resources
Executive Order 12856: Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements	Requires that the head of each federal agency be responsible for ensuring that all necessary actions are taken for the prevention of pollution with respect to the agency's activities and facilities, and for ensuring that the agency complies with pollution prevention, emergency planning, and community right-to-know provisions.	Hazardous Materials

Relevant Laws and Regulations	Summary	Affected Resource(s)
Mississippi Department of Environmental Quality (MDEQ) Non-hazardous Solid Waste Management Regulations (as amended)	Establishes the minimum State criteria under the Mississippi Solid Waste Law, as amended, for the management of non-hazardous solid waste for the protection of human health and the environment.	Non-Hazardous Waste Management
MDEQ Hazardous Waste Management Regulations	Establishes the minimum State criteria, standards, and annual reporting requirements for the generation, storage, transport, treatment, and disposal of hazardous wastes.	Hazardous Materials
Mississippi Air and Water Pollution and Control Law (MS Annotated Code 49-17-1 through 49-17-432) and Implementing Regulations	Set forth the procedures and requirements for preventing, abating, and controlling air pollution caused by air contaminants being discharged into the atmosphere as particulates, smoke, fly ash, solvents, and other chemicals. Gives the State (MDEQ, Office of Land and Water Resources) the responsibility of studying, managing, conserving, and augmenting water resources in the State, as well as for the protection and procreation of fish and wildlife. The Office is also responsible for developing and maintaining a statewide data base on water resources information to use in formulating a comprehensive "State water management plan."	Air Quality; Water Quality
Tennessee Air Quality Act (TN Code Annotated, Section 53-3408 et seq.) and the Tennessee Air Pollution Control Regulations	Sets forth the procedures and requirements for preventing, abating, and controlling air pollution caused by air contaminants, and maintaining a balance between the benefits of clean air and the economic cost of achieving clean air. Defines ambient air quality standards to be achieved and maintained.	Air Quality; Human Health and Safety
Tennessee Solid Waste Management Act of 1991, as amended (TN Code Annotated, 68 Section 211-101 et seq.) and Regulations Governing Solid Waste Processing and Disposal	Establishes the procedures and requirements for permitting of solid waste storage, processing, and disposal facilities and for the management of solid waste throughout the State of Tennessee. Established a 25 percent solid waste reduction goal for the State. Mandates that each county within the State have one or more disposal systems available to meet the needs of county residents. Requires State and local officials to develop comprehensive solid waste management plans by county or region.	Waste Management
Tennessee Water Quality Control Act of 1977 (TN Code Annotated, 69 Section 3-108) and Implementing Regulations	Gives the State the responsibility of, and sets for the procedures and requirements for, abating existing water pollution of Tennessee waters, reclaiming polluted waters, preventing future pollution of the waters, and planning for the future use of waters of the State.	Water Resources

APPENDIX D

PUBLIC SCOPING

SCOPING PROCESS

The purpose of the scoping process, as outlined in the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1501.7), is to determine the scope of issues to be addressed in the EA/EIS and to identify significant issues relating to the action being proposed. The lead agency is required to invite input from Federal, State, and local agencies, affected Indian tribes, project proponents, and other interested parties (Section 1501.7 (a)(1)). Scoping is required for all EAs prepared by the NPS.

To satisfy scoping requirements for this proposed action, three public meetings were held, in Dover, Tennessee and Murray, Kentucky, on May 29, 2002, and again in Dover on June 27, 2002. Approximately 110 people attended the meetings on May 29, and about 40 people the subsequent meeting. An invitation to the June 27 scoping meeting at the Stewart County Public Library in Dover was sent out by a cooperating partner with the NPS, the West Kentucky Corporation (Figure D-1). Figure D-2 is a photograph depicting attendees at the June 27, 2002 scoping meeting.

Comments and questions were made at the meeting. No written comments were received, although NPS staff took notes, which are contained in Section 5. A web site called "Saving Fort Heiman" has been set up on the World Wide Web by the Fort Heiman friends group at <http://www.thinkwestkentucky.com/fortheiman/>.

NPS sent out a letter of thank you to participants (Figure D-3) and continues to cooperate with state and local governmental agencies as well as the local non-profit group supporting protection of Fort Heiman.



Figure D-1a. Invitation to June 27, 2002 scoping meeting

Great News! Since the Vicksburg Campaign meeting at Murray on May 29th, great things have happened! First of all, we have received one of two grants submitted for the Fort Heiman project. The group was presented a check by Jody Lassiter with the KY Department of Local Government in June for **\$60,000**. We have since learned that we have received an additional **\$15,000**.



Thank you to Commissioner Lassiter, Senator Jackson, Representative Buckingham, Congressman Whitfield, Judge Elkins, Mayor Curd and others who have helped make this happen. A special Thank You to Sandy Forrest for all the hard work and dedication to the project.

Now we need your help again. Next Thursday, June 27th at 3 PM, the National Park Service, Denver Service Center study team is meeting in downtown Dover, TN to evaluate and make recommendations to expand the boundaries of Fort Donelson National Battlefield to include the Fort Heiman area. We are going to have limited opportunity to show the National Park Service how important inclusion in the Vicksburg Campaign will be to both Tennessee and Kentucky. For more information, call the battlefield office at 931 | 232-5348.

If at all possible, **please** plan to **attend** the meeting. It will be held at the Stewart County Library. It is **VERY VERY IMPORTANT** that we have a strong show of support there.

DIRECTIONS: Take Hwy 79 into Dover to Main Street. Go to the only traffic light and turn right in front of the courthouse onto Hwy 49. The library is located across from the old high school on the right. There will be signs to direct you.

P.S. Don't forget to contact Governor Patton in regards to our TEA-21 grant still pending. His number is (502) 564-2611 or by email: governor@mail.state.ky.us

FORT HEIMAN FORT HEIMAN

Figure D-1b. Invitation to June 27, 2002 scoping meeting (back side)



Figure D-2 – June 27, 2002 scoping meeting at Stewart County Public Library



IN REPLY REFER TO:

A3415(FODO-A)

July 8, 2002

United States Department of the Interior

NATIONAL PARK SERVICE
Fort Donelson National Battlefield
P. O. Box 434
Dover, Tennessee 37058-0434
Phone (931) 232-5348

Leon Kolankiewicz
Mangi Environmental Group
701 W. Broad Street
Falls Church, Virginia 22046

Dear Leon:

Thank you for your interest in preserving Civil War sites in Tennessee and Kentucky. Your attendance at the June 27 meeting in Dover, Tennessee was appreciated.

In our country's Civil War, more than 620,000 Americans died during this conflict. If the same proportion of our population were killed today, five million Americans would die! Civil War sites are a non-renewable, irreplaceable resource. Through enhanced educational and interpretive programs, the visitor is better able to visualize these dramatic scenes.

Fort Donelson National Battlefield, located near Dover, Tennessee, preserves the remains of a Confederate fort, a national cemetery and the only remaining original structure that housed a major Civil War surrender. This site is one of 378 areas nationwide set aside for perpetuity and managed by the National Park Service. Few regions in our nation are so privileged to have such a nationally and internationally renowned historical site. The boundary revision of Fort Donelson can only assist in preserving America's heritage. Additionally, the economic benefits from tourism should become evident over the years.

Again, thank you again for your support. If anyone on the staff can assist you, please let me know.

Sincerely,

Richard J. Hanks
Superintendent

**Figure D-3. Thank you letter from FODO superintendent to
scoping meeting participants**

APPENDIX E

COMMENTS ON THE DRAFT EA

PUBLIC REVIEW OF THE DRAFT EA

A copy of this Draft EA was sent to all persons who requested a copy during the scoping process, as well as to other pertinent agencies and individuals potentially affected by the Proposed Action. This Draft EA will be available for public review for a minimum of 30 days. During this public review period, written comments on the EA are invited from the public and interested agencies. All comments received on the Draft EA will be reviewed by multiple parties, and appropriate responses will be prepared. Comments determined to be relevant to the project will be incorporated into the Final EA.

All comments and/or questions regarding the project or the Draft EA can be directed to:

Richard J. Hanks, Superintendent
Fort Donelson National Battlefield
P.O. Box 434
Dover, TN 37058-0434

After the 30-day public review period, the NPS will determine if the proposed action is significant enough to prepare an environmental impact statement (EIS). If an EIS is not required, the Regional Director of the NPS will sign a Finding of No Significant Impact (FONSI), which describes the selected alternative, why it was selected, and why it will have no significant impacts. The EA and FONSI together will conclude the NEPA compliance for this project.

APPENDIX F

**VISITATION STATISTICS FROM SIMILAR
CIVIL WAR AND MILITARY HISTORY
THEMED NATIONAL PARKS**

VISITATION STATISTICS FROM SIMILAR CIVIL WAR AND MILITARY HISTORY THEMED NATIONAL PARKS

Although it is not possible to accurately forecast visitation at Fort Heiman, were it to be added to FODO, it is possible to get a rough estimate of potential visitation by examining visitation figures from similar units. Table F-1 displays recent visitation figures for 36 Civil War and Revolutionary War-related national and state historic parks. All of the parks in the sample are located in the Delta and Deep South States. Only parks in which the main attraction was military-related were included. Several state parks were not included in the sample for this reason. There may be a historic fort, for instance, but other recreational components also attract many visitors, meaning visitation to the park is not solely to see the historical site. If the two types of visits could not be separated, the park was not included in the analysis. For example, Fort Macon in North Carolina has a Civil War fort, but also contains a beach on the Atlantic Ocean.

Table F-1. Historic Military-Related National and State Parks in the Southern US.

Park Name	State	Annual Visitation (1999 or 2000)	Acreage	Miles from Interstate	Miles from City with Population > 50,000	Visitor's Center or Museum	Battlefield	Civil War Significance	NPS
Horseshoe Bend NMP	AL	125,372	2,040	60	65	Y	Y	Y	Y
Fort Toulouse SP	AL	212,439	340	14	10	Y	N	N	N
Fort Morgan HS	AL	92,453	480	65	40	Y	N	Y	N
Historic Blakely SP	AL	40,000	1,000	7	10	N	Y	Y	N
Confederate Memorial Park	AL	37,477	102	13	48	Y	N	Y	N
Chickamauga & Chattanooga NMP	GA	838,350	8,129	5	10	Y	Y	Y	Y
Kennesaw Mountain NB Park	GA	1,341,712	2,884	5	10	Y	Y	Y	Y
Andersonville NHS	GA	167,373	495	30	20	Y	N	Y	Y
Pickett's Mill Battlefield SHS	GA	10,000	765	15	20	Y	Y	Y	N
Fort Morris SHS	GA	13,000	67	7	20	Y	N	N	N
Jefferson Davis Memorial SHS	GA	25,000	13	19	55	Y	N	Y	N
Fort McAllister Historic Park	GA	56,000	1,700	9	25	Y	N	Y	N
Abraham Lincoln Birthplace	KY	236,180	117	3	55	Y	N	Y	Y
Fort Munfordville	KY	6,000	218	2	70	Y	Y	Y	Y
Columbus-Belmont SP	KY	90,940	156	20	130	Y	N	Y	N
Perryville Battlefield SHS	KY	38,672	250	30	45	Y	Y	Y	N
Mansfield SHS	LA	6,264	44	10	35	Y	Y	Y	N
Port Hudson SHS	LA	27,389	909	1	15	Y	Y	Y	N
Brices Cross Roads NB Site	MS	8,000	1	70	50	Y	N	Y	Y
Visitors Center, Natchez Trace Parkway, Tupelo	MS	51,249	1	70	50	Y	N	Y	Y
Vicksburg NMP	MS	934,226	1,860	30	1	Y	Y	Y	Y
Grand Gulf Military Monument Park	MS	38,000	400	25	55	Y	Y	Y	N
Guilford Courthouse NMP	NC	822,948	221	5	1	Y	Y	N	Y
Moore's Creek NB	NC	89,872	88	20	15	Y	Y	N	Y
Almanace Battleground	NC	12,032	40	6	20	Y	Y	N	N

Table F-1. Historic Military-Related National and State Parks in the Southern US.

Park Name	State	Annual Visitation (1999 or 2000)	Acreage	Miles from Interstate	Miles from City with Population > 50,000	Visitor's Center or Museum	Battlefield	Civil War Significance	NPS
Bentonville Battleground	NC	30,000	240	6	30	Y	Y	Y	N
Cowpens NB	SC	212,876	842	5	35	Y	Y	Y	Y
Ninety Six NHS	SC	28,492	989	25	25	Y	N	N	Y
Fort Sumpter National Monument	SC	319,147	195	1	1	N	N	Y	Y
Kings Mountain NMP	SC	257,499	3,945	20	10	Y	Y	N	Y
Stones River NB	TN	186,212	714	30	1	Y	Y	Y	Y
Andrew Johnson NHS	TN	59,587	17	60	15	Y	N	Y	Y
Fort Donelson NB and Cemetery	TN	219,049	552	40	30	Y	Y	Y	Y
Shiloh NMP	TN	261,472	3,973	50	50	Y	Y	Y	Y
Fort Pillow State Historic Park	TN	48,000	1,642	35	65	Y	Y	Y	N
Sycamore Shoals	TN	275,000	50	10	55	Y	N	N	N

Legend:

NMP = National Military Park; SP = State Park; (N) or (S) HS = (National) or (State) Historic Site; NB = National Battlefield
Y = Yes; N = No

Sources: NPS, 2000a; Bailey, 2001; Baker, 2001; Bangert, 2001; Blakely, 2001; Boehringer, 2001; Brown, 2001; Dalton, 2001; Flirt, 2001; Fraering, 2001; Games, 2001; May, 2001; McCloud, 2001; Parker, 2001; Standbridge, 2001; Taylor, 2001b; Winchester, 2001